This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

W1
TR
227J

UC-NRLF
B 4 314 014

UNIVERSITY OF CALIFORNIA
COLLEGE OF DENTISTRY

Digitized by Google

LIBRARY
OF THE
DENTAL DEPARTMENT,
UNIVERSITY OF CALIFORNIA.

This book must be returned within four days. Fine, five cents each day for further detention.

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

TRANSACTIONS

—OF THE—

OHIO

State Dental Society

TWELFTH ANNUAL MEETING,

—HELD IN—

COLUMBUS, DECEMBER 5th, 6th, AND 7th, 1877.

PUBLISHED BY ORDER OF THE SOCIETY.

RANSOM & RANDOLPH:
TOLEDO, OHIO.

Digitized by Google

TOLEDO, OHIO:
BLADE PRINTING & PAPER COMPANY,
1878.

Digitized by Google

Accession No. 1176

PREFACE.

THE OHIO STATE DENTAL SOCIETY, at its recent annual meeting, decided to publish its transactions in the same form and under the same arrangement as that of the last two years, that having been quite satisfactory to all interested.

The Constitution and By-Laws were published in the volume of last year; and no changes, except that given on page 11 of these proceedings having been made in either since that time, their publication in this volume will be omitted, and also the list of dentists of the State. The list of the membership, however, will be found at the close of the volume.

The Society, as heretofore expressed, cannot be regarded as responsible for or endorsing the views and opinions of its members as given in the papers and discussions, except by explicit action for that purpose. Each member is responsible for his own presentations.

J. TAFT,
C. BRADLEY,
W. H. SILLITO,
Publishing Committee.

Digitized by Google

OHIO STATE DENTAL SOCIETY.

ORGANIZED IN 1866.

OFFICERS:

(1878)

PRESIDENT	J. C. WHINNERY	Salem.
FIRST VICE-PRESIDENT	D. R. JENNINGS	Cleveland.
SECOND VICE-PRESIDENT	F. A. HUNTER	Cincinnati.
CORRESPONDING SECRETARY	H. A. SMITH	Cincinnati.
RECORDING SECRETARY	A. F. EMMINGER	Columbus.
TREASURER	GEO. W. KEELY	Oxford.

COMMITTEES.

Executive Committee.

F. H. REHWINKEL (Chillicothe), R. G. WARNER, J. R. SAFFORD.

Publishing Committee.

J. TAFT (Cincinnati), C. BRADLEY, W. H. SILLITO.

Committee on Ethics.

H. A. SMITH (Cincinnati), W. H. CARTER, N. B. ATCHISON.

Committee on Membership.

L. BUFFET (Cleveland), I. WILLIAMS, H. M. REID.

Committee on Voluntary Essays.

GEO. WATT (Xenia), H. L. AMBLER, C. R. TAFT.

State Board of Dental Examiners.

J. TAFT (President), W. P. HORTON (Secretary and Treasurer).
F. H. REHWINKEL, H. A. SMITH, C. R. BUTLER.

Digitized by Google

LIBRARY
COLLEGE OF DENTISTRY
UNIVERSITY OF CALIFORNIA
SAN FRANCISCO,

MINUTES

OF THE

OHIO STATE DENTAL SOCIETY.

THE Twelfth Annual Meeting of the Society was held in the House of Representatives, State Capitol Building, Columbus, Ohio, December 5th, 6th and 7th, 1877.

President I. Williams, in the Chair, called the Society to order at 10:30 A. M.

In the absence of the Recording Secretary, A. F. Emminger was appointed Secretary, pro tem.

Calling of the roll was dispensed with on account of not having the books of the Society.

The minutes of last meeting in December, 1876, were read by the Secretary and approved by the Society.

On motion, it was decided that the hours of meeting shall be from 9 A. M. to 12 M., 2 P. M. to 5 P. M., and 7 P. M. to adjournment.

Committees on Ethics and Membership asked for further time in which to make their reports.

Letters from Dr. A. O. Rawles, Lexington, Ky., and Dr. S. B. Tizzard, Dayton, Ohio, were read by Dr. Geo. W. Keely. Both letters were duly acknowledged by the Society.

Dr. Tizzard applied for membership to this Society by written communication, not being present.

On motion, his case was referred to the Committee on Membership.

Committee on Membership reported favorably upon the names of W. P. Rice, Mt. Union, and J. Stephan, Cleveland, and recommended their admission to membership in this Society.

Digitized by Google

Report was received and adopted. Upon ballot both candidates were elected.

Dr. Geo. W. Keely, Treasurer of the Society, made an informal report, for general information, concerning members of the Society who are in arrears for dues and assessments.

On motion, a Committee of Three was appointed by the Chair to confer with the Treasurer in reference to delinquents on assessments.

The following are the Committee:

J. TAFT,
H. A. SMITH,
D. R. JENNINGS.

No farther miscellaneous business being presented, the first subject for discussion was taken up, viz.:—"Influence of diseased teeth in other and remote organs."

The subject was discussed by Drs. W. P. Horton and J. Taft.

The hour of adjournment having arrived, the Society adjourned until 2 o'clock P. M.

WEDNESDAY AFTERNOON.

President I. Williams in the Chair. Society called to order at 2 o'clock.

Recording Secretary having sent the books of the Society the roll was called.

Committee on Membership report favorably upon the application of E. O. Arrison, and recommend his admission to membership. Being balloted upon, he was duly elected.

Dr. Keely moved that Drs. Corydon Palmer, of New York City, and J. C. Whinnery, Jr., of California, be elected honorary members of this Society.

Motion carried.

On motion, the resignation of Dr. R. L. Evans, Toledo, Ohio, was accepted. Cause of resignation, declining health.

Digitized by Google

No other business being presented, the first subject was resumed and discussed by Drs. Geo. Watt, C. R. Butler, H. A. Smith, L. Buffett, W. H. Sedgwick, J. R. Clayton, J. Taft, W. P. Horton, W. M. Herriott and J. H. Warner.

Dr. Butler presented a paper prepared by Dr. H. L. Ambler, pertaining to the subject before the Society, which was read by Dr. Butler. By order of the Society the essay was referred to the Committee on Publication, when Dr. Butler exhibited an interesting model with a minute explanation of treatment.

Dr. J. C. Scott asked permission to cite a case in practice, and was called to order by Dr. H. A. Smith, who asked for information as to the standing of Dr. Scott in this Society. After investigation it was ruled by the Chair that Dr. Scott could not have the privilege of the floor.

On motion of Dr. Keely, Dr. Scott was granted five minutes' time in which to make his explanation, but this was objected to by Dr. J. Taft, claiming that Dr. Scott's case was now before the Committee on Ethics.

Dr. J. H. Warner moved that the rules be suspended, and that Dr. Scott be re-instated by paying all arrearages to the Society, amounting to $22.00. Motion lost.

The Chair decided that Dr. Scott was not a member of this Society, and consequently beyond its jurisdiction.

Adjourned until 7 o'clock this evening.

WEDNESDAY EVENING.

President Williams called the Society to order at 7 o'clock, sharp. The second subject was taken up and discussed by Drs. J. Taft, J. H. Siddall, J. H. Warner, Geo. Watt, D. G. French, C. Palmer and C. R. Butler.

The hour being late the Society adjourned until 9 o'clock tomorrow morning.

Digitized by Google

THURSDAY MORNING.

The Society was called to order by the President at 9 o'clock. Rev. Mr. Hopkins opened the session with devotional exercises. Minutes of the previous session were read and approved and adopted by the Society.

The discussion of the second subject was then resumed and participated in by Drs. J. Taft, H. A. Smith, W. M. Herriott, L. Buffett, F. H. Rehwinkel, Geo. Watt, C. R. Butler and J. H. Warner.

On motion, the second subject was passed and the third was taken up, viz.:—"Lancing the gums during first dentition; is the operation called for? if so, how should it be performed?"

Before the discussion of this subject was entered into, Dr. Clayton made a correction in the proceedings of yesterday, as reported in the Ohio State Journal of this date, in regard to his remarks upon the subject of the influence of diseased teeth upon other and remote organs.

The subject was then discussed by Drs. Geo. Watt, J. Taft, C. Palmer, J. H. Warner and F. H. Rehwinkel.

On motion, the second subject was passed, and the fifth subject to be taken up immediately after the exhibition of appliances and instruments, in the afternoon.

Adjourned to half-past 1 o'clock.

THURSDAY AFTERNOON.

At half-past 1 o'clock the exhibition of instruments and appliances engaged the attention of the Society until half-past 2 o'clock, when the Society was called to order by the President.

The Committee on Membership reported favorably upon the application of Dr. Wm. H. Sillito, and recommended his admission to membership. By order of the Society, the Secretary cast an affirmative ballot for the candidate.

The same Committee reported as follows upon the application of Dr. Tizzard, of Dayton, O., viz.:—"The admission of Dr. Tizzard, of Dayton, O., to membership in this Society, upon his applica-

Digitized by Google

tion by letter, would not be in conformity with our usual custom. Much as we would like to welcome him, we feel compelled to decline his proposition until such time as he can comply with our regular rule.

J. H. SIDDALL,
W. P. HORTON, } *Committee.*
F. A. HUNTER,

The fifth subject was then taken up, Dr. Watt leading off by reading a very able and carefully prepared paper upon "Galvanic action within the mouth."

On motion, the paper was referred to Publication Committee.

By invitation, Dr. Corydon Palmer gave a very interesting and instructive diagram lecture upon the restoration of natural teeth by mechanical means.

Dr. Rehwinkel read a letter of invitation from Dr. Gundry, Superintendent of the Asylum for Insane, inviting the Society to visit that institution.

On motion, the receipt of the letter of invitation was acknowledged, and thanks of the Society tendered Dr. Gundry for his kindness; also expressing regrets for our inability to accept in a body.

Dr. Palmer then resumed his remarks, giving some valuable suggestions upon the use and manipulation of gold foil.

Dr. J. H. Siddall read a paper bearing upon the subject, which was referred to Publication Committee.

On motion, a vote of thanks was tendered Dr. Palmer for his remarks upon gold foil, and the subject of gold was discussed by J. Taft and W. P. Horton.

Committee on Membership reported favorably upon the application for admission to membership of Dr. C. Bradley, of Dayton. He was duly elected.

Committee on Ethics made a report, viz.:—The Committee on Ethics beg leave to report that the case of Dr. J. C. Scott, referred to them from previous Committee, has passed beyond their jurisdiction, his membership having terminated by non-payment of dues, according to resolution passed December 10th, 1872.

J. C. WHINNERY,
W. H. CARTER, } *Committee.*

Digitized by Google

Time of adjournment having arrived, it was so announced by the Chair.

Adjourned to 7 o'clock.

THURSDAY EVENING.

The Society was called to order at 7 o'clock, President Williams in the chair. No miscellaneous business being offered, the fourth subject was announced for consideration, viz.:—"Mechanical Dentistry."

Dr. Clayton, of Indiana, read a paper upon the subject.

On motion, the paper was received and referred to Committee on Publication.

Miscellaneous business being in order, the Executive Committee asked for suggestions in regard to subjects for discussion at our next meeting in December, 1877.

Dr. F. H. Rehwinkel, Chairman of Executive Committee, presented a bill for printing and postage for announcements of this meeting, $14.25.

The bill, having passed the Committee on Claims, was accepted and an order drawn on the Treasurer for the amount.

The fourth subject being before the house, it was discussed by Drs. J. C. Whinnery, C. R. Butler, H. M. Reid, F. H. Rehwinkel, H. A. Smith, J. H. Warner, W. M. Herriott, Geo. W. Keely, J. W. Clayton and C. VonBonhorst.

The time having arrived for the election of officers for the ensuing year, it was entered into with the following result:

President	J. C. Whinnery	Salem
First Vice President	D. R. Jennings	Cleveland
Second Vice President	F. A. Hunter	Cincinnati
Corresponding Secretary	H. A. Smith	Cincinnati
Recording Secretary	A. F. Emminger	Columbus
Treasurer	G. W. Keely	Oxford
Dental Examiners	J. Taft	Cincinnati
	F. H. Rehwinkel	Chillicothe

No further business.

Adjourned to 9 o'clock, to-morrow morning.

Digitized by Google

FRIDAY MORNING.

The Society was called to order, President Williams in the chair. Religious exercises were conducted by Rev. S. G. Hopkins, of this city.

Minutes of previous session were read and approved by the Society.

Miscellaneous business being in order, the Society took exceptions to the report of the proceedings of yesterday, as published in the Ohio State Journal.

Dr. J. Taft said that the report of proceedings of Scientific Societies were many times misrepresented, and was generally presented to the public by the press in such a shape as did not give a correct idea of these proceedings.

The Executive Committee made a report and presented a programme, or list of subjects, for the deliberations of this Society at its next meeting in December, 1878.

1. Histology of the teeth.
2. Nodular calcification of the tooth pulp; its diagnosis and treatment.
3 Physical diagnosis of diseased action arising from, or in connection with, the dental organs.
4. Dental mechanism.
5. Heredity; as its influence is manifested on or by the teeth.
6. The health and vital force of the dentist.
   a. What can be done to avoid a disturbance of mental equanimity and nervous irritation of the operator.
   b. What hygenic and therapeutic means will best conserve the general health of the dentist.
7. Galvanism of the mouth.
8. Abrasion of the teeth; sensitiveness of necks; causes and treatment.

The additional By-Law was then taken up, voted upon and carried, viz.:—"No member who is in arrears for dues shall be allowed the privilege of the floor."

The amendment to Section 1 of the By-Laws was then entertained and lost.

On motion of Dr. J. Taft, it was decided that the next meeting of this Society would be called to order at 2 o'clock P. M., on the first Tuesday of December, 1878.

Digitized by Google

On motion, a vote of thanks was tendered Adjutant-General C. W. Kair, for courtesies extended to this Society. Also, to the clergy of this city, for their kindness and assistance during this meeting.

Dr. Geo. W. Keely read a letter from Dr. M. Wells, of Indianapolis, Indiana.

Bills approved and ordered paid:

ELLIOTT, JONES & Co.,
Scratch Books, - - - - - - - - $1.50

J. TAFT,
List of Dentists of the State of Ohio, as published in the Minutes of 1876, - - - - - - - $10.00

President I. Williams appointed Drs. Geo. Watt and C. Palmer a Committee to escort the President elect to the chair.

He was duly presented, and in a handsome manner thanked the Society for the compliment conferred.

The retiring President then delivered his annual address. It was referred to Publication Committee.

Bills as follows were presented, duly approved by the Committee on Claims, and ordered paid by the Society:

H. B. STETLER,
For attending the electrical apparatus in lighting hall, - $3.00

MR. ROBINSON,
For services as janitor, etc., - - - - - - $11.25

Dr. F. H. Rehwinkel advocated the purchase of a seal for this Society.

On motion, A. F. Emminger was appointed a Committee of One to act in the matter.

Dr. W. P. Horton made the annual report in behalf of the State Board of Dental Examiners, viz.:

COLUMBUS, OHIO, Dec. 7th, 1877.

To the Ohio State Dental Society:

GENTLEMEN.—Your Board of Examiners ask leave to make the following report:

There has been held but one meeting of the Board during the year. That meeting, beginning on the 4th day of December, 1877, at noon, at the American Hotel, in this City of Columbus, and continued for two days. At the meeting three candidates presented

Digitized by Google

themselves for examination, viz.:—B. R. Shipp, Hillsboro, Highland Co., Ohio, Wm. H. Sillito, Xenia, Green Co., Ohio, Isaac L. Mitchell, London, Madison Co., Ohio.

The result of the examination of E. W. Dole, of Salem, Columbiana Co., Ohio, was presented by two members of the Board, and was approved by the full Board.

These applicants were submitted to both written and oral examinations.

The Board feel much encouraged for the future of the profession in this State, from the excellence of their attainments, being far better than the average, thus deserving special commendation to themselves as well as reflecting great credit upon their preceptors for the thorough manner in which they have performed their work.

The financial condition of the Board is as follows:

Expenses for the year ending Dec. 6, 1876	$183 50	
" " " " 7, 1877	134 00	
Making a total of		$317 50
Cash receipts for the year ending Dec. 6, 1876	$ 75 00	
" " " " " 7, 1877	125 00	
Making a total of		$200 00
Leaving a balance due the Board to date of		$117 50

Respectfully Submitted,

J. Taft, *President of Board.*

W. P. Horton, *Sec'y and Treas.*

The report was accepted and adopted.

Dr. J. Taft presented a method of constructing artificial dentures, accompanied by models prepared by Dr. Hall of Piqua, Ohio. The subject of mechanical dentistry being still before the Society, Dr. Taft considered at considerable length the subject he presented.

Mr. Wm. Leonard presented each member of the Society with a copy of the Centennial Report of the State of Ohio. A vote of thanks was tendered Mr. Leonard for the compliment.

On motion, the fourth subject was passed, and the fifth subject resumed.

On motion, the regular order of business was suspended for the introduction of miscellaneous business.

Dr. Rehwinkel presented a pneumatic mallet.

Dr. W. P. Horton related a case in practice where the extraction of two molar teeth entirely cured an aggravated case of disease

Digitized by Google

of the ear that would not yield to medical treatment. Also a case of replanting tooth knocked out by accident; operation successful.

Committee on Membership report favorably upon the application of Dr. J. C. Oldham, of Springfield, and recommend his admission to membership. He was duly elected, the Secretary casting the vote of the Society.

By permission of the Society, Dr. Buffett cited a case of restoration of the palate by artificial appliance. The patient was deaf. When the palate was inserted hearing was restored.

The Chair announced the Standing Committees for the year as follows:

F. H. Rehwinkel,
R. G. Warner,
J. R. Safford, } *Executive Committee.*

J. Taft,
C. Bradley,
W. H. Sillito, } *Publication Committee.*

H. A. Smith,
W. H. Carter,
N. B. Atcheson, } *Committee on Ethics.*

L. Buffett,
I. Williams,
H. M. Reid, } *Committee on Membership.*

Geo. Watt,
H. L. Ambler,
C. R. Taft, } *Committee on Voluntary Essays.*

On motion, the hour of final adjournment was extended to one o'clock.

The Books of the Treasurer, having been audited by a Committee appointed for that purpose, consisting of W. P. Horton and H. A. Smith, the Treasurer, Geo. W. Keely, made the following annual report:

Digitized by Google

By balance at last report, December 7, 1876		$ 96 71
Dues received, 1877		159 06
Membership Fees, (6) at $3.00 each		18 00
Assessments		35 00
		$308 71
PAID OUT.		
Follett & Cochrane	$88 00	
Announcements and Postage, 1877	14 00	
Scratch Books	1 50	
J. Taft, for services	10 00	
Janitor	11 25	
Lighting Hall	3 00	
		$127 78
Balance on hand, October 7th, 1877		$180 96

Respectfully submitted,

GEO. W. KEELY, *Treasurer.*

On motion, the Committee on Membership, and Recording Secretary were authorized to appoint delegates to the American Dental Association.

The following members paid their dues for the year: Geo. W. Keely, W. P. Horton, C. R. Butler, L. Buffett, J. Taft, H. A. Smith, Geo. Watt, F. H. Rehwinkel, I. Williams, D. R. Jennings, J. H. Siddall, J. W. Lyder, W. H. Carter, R. G. Warner, C. G. VonBonhorst, J. H. Warner, C. R. Sabine, J. B. Beauman, J. C. Whinnery, W. R. Lilley, H. M. Reid, W. H. Sedgwick, A. Spencer, E. Chidister, P. A. Palmer, A. F. Emminger, Rollin Horton, R. L Evans, A. L. Brown, F. A. Hunter, N. B. Acheson, Ira Brown, H. L. Ambler, W. F. Galbraith, W. H. Sillito, W. C. Stewart, E. E. Rogers, W. J. Caris, J. R. Safford, J. Stephan, E. O. Arrison, W. P. Rice, C. Bradley and J. C. Oldham.

Adjourned to meet in Columbus, Ohio, the first Tuesday in December, 1878, at 2 o'clock, P. M.

A. F. EMMINGER, *Recording Secretary.*

Digitized by Google

LIBRARY
COLLEGE OF DENTISTRY
UNIVERSITY OF CALIFORNIA
SAN FRANCISCO

DISCUSSIONS

IN THE

TWELFTH ANNUAL MEETING

OF THE

STATE DENTAL SOCIETY,

—AT—

COLUMBUS, O., DECEMBER 5TH, 6TH AND 7TH, 1877.

THE Society having transacted some miscellaneous business, proceeded to the consideration of the first topic assigned for discussion, viz., "The Influence of Diseased Teeth on Other and Remote Organs."

The discussion was opened by

DR. HORTON:—Mr. President, In making some remarks on this subject, I do not expect to add very much to the knowledge of the members of this Society or of the profession, but hope that something useful may be said on it. I am sorry that my time has been so occupied with other matters than professional, that I have had no opportunity to make any written notes on this subject. What I say will be thoughts that occur to me as I proceed.

This subject, in another form, was before the Society last year, only a little differently worded, but the same question as to the reflex influences of diseased teeth upon other organs of the body. Any who have had much experience in treating the dental organs—and it is supposed that those who have had five years practice have had considerable practice in that direction—have, at different times, been put to their wits' ends to understand certain manifestations in different parts of the body, which could be traced by any careful observer, to some diseased dental organ. But the trouble is not so

Digitized by Google

much in relation; there is always, upon every question, two sides, two lines of thought that can, upon any considerable reflection, be presented; and if the term "reflex" had been used it might have been better. We are now constrained to discuss the subject of the influence of diseased dental organs upon other portions of the body. If it had been "the reflex influence of other portions of the body upon the teeth," then it would come home to the dentist. We can only discuss what we know as coming from other members of the profession who are practicing upon different organs of the body than the ones we are called upon to treat. I think that explanation of the question will strike every one present as indicating that it should be amended so as to read, "What Influence have other Diseased Organs upon the Teeth?"

In discussing the subject as it stands now, I am at a loss to know what to say. I have had my medical friends come to me frequently and express doubt and uncertainty in the matter of the influence of diseases of the teeth upon the body. I have frequently had patients come to me complaining of their teeth, and I could find no trouble about them. Many times I have examined patients who came complaining considerably about the mouth and teeth. Those who had sound teeth, in good condition, have applied for treatment of those organs, when I could find nothing local attaching to the organs to indicate the cause of trouble, and I have been obliged to refer them back to the physician for other treatment. This is due, I think, in many cases to the influence of malaria, especially in our section of the country; malaria has a reflex influence, very often, upon the teeth. I don't pretend to prescribe for them, because I could not understand that there was anything that required my special treatment; and I presume that has been the experience of many here. This occurs more frequently when the atmospheric condition is favorable for the production of malaria; there is more or less every year, but some years more than others; and this particular condition of the atmosphere continuing for many months will develop itself in the system. When these malarial diseases occur, you will frequently find the teeth affected, and a great many times when you can not find where there is any local difficulty about the mouth, it is reflected from other portions of the body, and manifests itself there when there is really no positive disease of the teeth.

Dr. J. Taft: Mr. President, I had hoped that some members who have not been so frequently heard on the floor of this association, would take the lead in this discussion, and I hope they may in this

Digitized by Google

and any other subjects that may come up. Let us hear some new voices, and perhaps some thoughts out of the ordinary channel.

Though we have not discussed this subject very much directly, it has incidentally been a great many times brought up in discussion. It is a very interesting and important subject, one to which we should all give attention, because the influence of diseased teeth on other organs of the body is important and extensive. The affections of the teeth, and the contiguous parts, the mucous membrane, the gums, the periosteum, and the pulps of the teeth, have frequently great influence upon other organs; and the diseases to which these structures are subject are, on the other hand, influenced and modified by unfavorable systemic conditions.

The affections to which the enamel and dentine are subject, do not exercise any direct or especial disease-producing effect upon other and remote tissues and organs. It is not so, however, with the cementum, for it can hardly become effected without injuriously affecting the parts about it. For instance, when hypertrophy of the cement takes place, the periosteum assumes an abnormal condition, and sometimes a state of actual disease, and the alveolus becomes absorbed and weakened by loss of substance, and as a result of this the integuments covering the alveolus become diseased. In some instances, by this enlargement of a root or roots of teeth, the nerve branches that ramify the immediate parts are impinged upon, and neuralgia produced. This affection, as is well known, may be local, pervading but a small territory, or its outreach may be to quite distant parts. Again the precipitation of calcific matter in the pulps of teeth, whereby granules or nodules are formed; sometimes but one of these will be found, in other cases two, three or more. These, by contact with the nervous fibers in the pulp, often produce intense pain; this will usually be local, but occasionally will extend to other parts.

Decay of the teeth, especially in its incipiency, does not in any marked degree affect other tissues or organs, but the adverse influence that is exercised upon them in the advanced stages of decay, can hardly be estimated or described. The results of decay of the teeth vary exceedingly both in character and degree. In some cases the teeth decay and wear away without making any appreciable inroads upon the normal condition of even the immediately contiguous parts or tissues, while on the other hand, soon after the attack of decay, though it may be only of one tooth, other parts contiguous, and sometimes remote, become affected, sometimes through sympa-

Digitized by Google

thy, but in other cases by the occurrence of actual disease, modified *always* by systemic susceptibility.

The following are some of the results of decay of the teeth: Loss of substance, devitalization of the dentine, death and loss of the pulp, disturbance of function in the contiguous parts, and sooner or later irritation and active disease. The entire system suffers in proportion as the work of mastication fails to be properly accomplished. The completeness of the work of mastication is not always in exact accord with the perfect condition of the teeth, but it depends much upon the care and attention which one bestows upon the work of mastication. Some, with a very imperfect set of teeth, will masticate far better than another with a most perfect set of teeth. Some persons who have very good teeth use them but little in proper mastication. The teeth, and the parts about them, in some instances, take on disease for want of use.

Inflammation of the surrounding parts, that so frequently follows or accompanies decayed teeth, may be in degree, merely perceptible, or most intense; in extent it may be very circumscribed, occupying but a small territory, or it may reach out to quite remote parts.

In some cases the inflammation about the root of a tooth only involves the dental periosteum, and in that tissue only run through its various phases. Again it will involve the alveolus and the integuments overlying it, and extend no farther than these; in other cases the face may be involved one side and the front, or the whole, and sometimes the disease extends to the neck, shoulder and even the arm.

The eyes are often affected by diseased teeth, sometimes through involvement of the parts about them, and sometimes without this the eyes become seriously affected, partial blindness sometimes occurring; serious affection of the eyes has been relieved in some instances by the proper treatment of the teeth.

The hearing is in some instances seriously impaired by disease from the teeth, this more frequently from the third molar than any other tooth; to such an extent has this sometimes occurred that it has been found impossible to remedy the affection in the ear without removal of the offending tooth.

The Antrum of Highmore is in such close proximity to the roots of the superior molar teeth that oftentimes disease extends from these into it. The affections in this cavity are frequently obscure, and

Digitized by Google

difficult of diagnosis, especially to those not having an extended experience.

Neuralgia, arising from diseased teeth, should receive our close and scrutinizing attention; affections of this class are of frequent occurrence and severe in character.

I trust that in our discussions here all these points will receive careful and thorough consideration.

Afternoon Session.

DISCUSSION ON SUBJECT OF FORENOON RESUMED.

Dr. Watt: I like the way the question is expressed very well. It does not shut off the consideration of the reflex influences at all, in my estimation, and I don't know that it shuts off anything. It would be just about as full if it simply said: "The influence of diseased teeth on other organs." But the Committee have wisely added an expression which gives a hint that these influences are sometimes more remote than would be generally supposed. Therefore, I think it is not only well, but happily expressed.

The local effects have been somewhat considered, especially by Professor Taft. But in considering the effects of diseased teeth, I suppose the organ, probably, that suffers most, and perhaps in its sufferings carries down more of the vital powers and force with it, than any other organ that suffers, is the stomach. I think all recognize the fact that the teeth when healthy and when used as efficiently as they can be used in masticating food, that even then the stomach has all it ought to do in dissolving that food. But if the teeth are seriously diseased the process of mastication will be more imperfectly performed, and for two or three reasons. One is, that it is something of a painful process often when the teeth are diseased to make mastication efficient.

At other times the masticating surfaces of the teeth are so destroyed by disease that there is not an efficient grinding of the food. I suppose if one-third of the grinding surface were taken out of a French millstone it would not give as good results in grinding wheat as a millstone in perfect order.

Digitized by Google

Then, again, diseased teeth are frequently surrounded, or accompanied by an offensive excretion or accumulation. I don't care how this may be brought about, at any rate, the mouth becomes an "open sepulcher"—see third chapter of Romans—and the process of mastication commingles this offensive, poisonous, dead matter, in a state of putrefaction—in a septical condition, with the food and passes it to the stomach commingling it there with the gastric juice.

Now, if a man's stomach suffers, you hit him close to where he lives. I suppose very many cases of dyspepsia, both in men and women, result from diseased teeth in that way. This organ may seem remote, perhaps, but not as remote as some that might be considered, but it is a very important one. Some of you look as though you did not know anything about the untold and indescribable terrors of dyspepsia or indigestion, and have never felt that diseased teeth have any influence of this kind whatever, but I think I have demonstrated a fact you will all recognize, that it is a serious question. It is worthy of note that Sir Thomas Watson, who was for a long time physician to the royal family of England, in noticing the fact that the Anglo-Saxon race—the English-speaking people—were increasing in longevity, that the average duration of life had increased some ten or twelve years in the period he mentioned, gives it as his opinion that the additional care and responsibility in reference to the teeth, caused by the development of dental surgery, as a specialty, has more to do with the prolongation of human life than any other one cause. It appears there was one physician, and in some respects the greatest one that ever lived, who was disposed to give to dentistry credit for all the skill its most enthusiastic advocates would claim. If it has been the chief means of adding twelve years to human life in a little over one generation, I think we would not any of us set up a higher claim for it. I suppose he referred mainly to the fact that defective teeth so invariably result in indigestion. I suppose the stomach is one of the most direct sufferers from this source—I will except the periosteum, the alveolar process and pulp.

Now, that impoverished condition will so derange the other functions of females and others, that diseases to which they are predisposed will be likely to be developed. It will in many cases be followed by consumption, general debility, chronic diseases and many things called nervousness, hypochondria with its indescribable conditions. These are some of the worst features of a derangement of the nutritive functions.

It often happens that the teeth of youngish women are so diseased that their systems become so impoverished that the ovarian functions

Digitized by Google

are interfered with more or less. As has been said, these functions will be suspended, which is not anything more than occurs when the shoemaker will not continue his business if he is out of leather. When these functions are thus interfered with for the want of material, in order to repair the system the blood must be restored to its normal quantity, and perhaps nearly to its normal condition. While in this enfeebled condition. females are liable to "green sickness," and many painful diseases; in fact, all that go together to hurt woman, and which shows that she can be hurt so much worse than man, and she may have all these because the function of mastication has not been properly performed.

There is another kind of action that may arise from the conditions described by Dr. Taft and others. In addition to chronic affections, hypertrophy of the cementum, etc., there may be irritation that does not amount to local pain, yet may cause untold torture to other parts. You put on a boot which may pinch your foot, and you may think you can stand it, as it hurts just a little, and it continues thus to pinch a little all day. At night, when you come home, and your little boy comes in and wants to play, you don't want to play with him; you feel uncomfortable, you can't tell why. If your little girl comes and climbs on your knee, you seem offish, and don't know why, and the child thinks it strange. If you sit down to supper you do not relish it; you may go to bed, but you don't sleep and you don't know why. It is all because the little nerves have been tortured all day. The whole nervous system is thrown out of balance, and you will probably dream of your grandmother or grandfather, and will feel unrefreshed all the next day. It is nothing to stand under a little drop of water; it does not hurt you; but if you are fastened there, and that drop continues to come at regular intervals, and continues long enough, it will kill you. Now, this amount of torture is not much, but by its continued operation the whole nervous system is strung up until it is ready to snap. The person will feel that his nerves are highly excited, but can hardly tell why. It is because the whole nervous system is aroused by reflex influence. The news of the suffering of those little nerves is sent, by way of the spinal column, to the brain, and word sent to the entire nervous system, and there is a disturbance in the camp. You cannot be a good Christian under such circumstances; you cannot be a good husband or father under such circumstances. I do not think there is half enough attention paid to these prolonged indications. A dentist may look in the mouth and say it is not exactly right, but decide to let it go, while it may be that the patient's constitution is all unstrung by let-

Digitized by Google

ting go that little affair. You that do not believe the truth of this principle ought to get yourselves fastened in a position where you would have to endure this little dropping until you would see that the whole system can be thus unstrung. It is in this way that we have in some constitutions various nervous paroxysms, may be hysterical, or hypochondriacal, or it may be violent tonic spasms, chorea, or Saint Vitus dance.

I had these two points, then, I wished to bring out: First, That injury throughout the entire process of nutrition results from decayed teeth; and, second, the reflex irritation of the nervous system from slight causes greatly prolonged. If the teeth are jumping like all sixty, there is something going to be done; the patient will have them attended to, and the dentist is obliged to act, but it is in neglecting these small points where I think the greatest mischief is done.

A paper prepared on this subject by Dr. Ambler was read by Dr. Butler, Dr. Ambler not being present.

Dr. H. A. Smith: Dr. Watt referred to instances where tetanic spasms had been induced by diseases of the teeth. I wish to refer to a case where the reflex influence induced by a diseased molar tooth resulted in trismus, and ultimately in the death of the patient. I do not know that I can describe the symptoms throughout the case, but as I learned from the dentist it was about as follows: He devitalized the nerve of the tooth, and the patient neglected to return as directed, but presented himself in the course of two weeks, with a slight difficulty, which did not amount to periostitis. He removed the dead pulp and cleansed the tooth, injecting into the nerve cavity carbolic acid. The patient returned sometime afterward with a swollen face, though with but little soreness of the tooth. The dentist told him he thought him a fit subject for his physician, and he immediately applied to a medical gentleman in the city, who said to him that he was threatened with lock-jaw. He returned home and went to bed and trismus did set in, and in the course of two or three weeks the patient died, although the muscles relaxed before his death—the patient dying from exhaustion.

Dr. Watt: What was the age of the gentleman you mentioned as having trismus?

Dr. Smith: I think he was about forty-five years of age.

Dr. J. H. Warner: Which tooth was it?

Digitized by Google

DR. SMITH: An Upper molar tooth. The dentist, who is one of the most competent, said he had treated the case as he generally treated them; that there was nothing unusual in the case.

DR. SMITH stated that he had lately seen some accounts of the treatment of trismus in the Pennsylvania hospital, and that in four cases treated with hydrate of chloral, three had recovered. One case treated in Cincinnati some years ago with tobacco, resulted in a cure. In the cases treated with chloral in the Pennsylvania hospital, he believed as high as one hundred grains had been administered in twenty-four hours. In some cases reported by a physician in India, it was stated that sometimes they used an ounce in the course of two or three days, resulting in recovery. He said he referred to this treatment because he thought such cases likely to occur nowadays, since dentists had got to replanting teeth. A case of tetanus had already been reported as resulting from replanting a tooth. He doubted, however, whether there were nearly as many teeth replanted as was supposed to be the case. He was aware that it was stated that such and such a dentist was replanting teeth every day, but he thought there was not an office in Ohio where such a thing was done daily. Where it was done the symptoms afterwards ought to be watched closely, because trismus, or tetanus, might occur, especially trismus. He had called attention to this matter because he thought there was danger in that direction. The records show that when this malady is well established, the chances of recovery are slight.

DR. BUTLER: I have a case I would like to present to the society, and which seems to me quite pertinent just at this point, after the statements made by Dr. Watt and also by Dr. Smith. Dr. Butler here presented a model for the inspection of the members, and continued as follows: I will state in the first place the character of the trouble as it presented itself to me, and also the character and temperament of the patient. She was a physician's wife, and was a lady of a very nervous temperament. She had been in poor health and had been, not long before she came to me to have some ordinary operations made, at Green Springs for her health. She had there gathered some physical and vital force, and thought she could endure these operations. When I first commenced she complained of pain along the left side of the face; she called it—probably getting the cue from her husband—facial neuralgia. She complained sometimes of the pain running down into her shoulder and arm. I made as careful an examination as possible, but was unable to discover anything that seemed to be the cause. There were several teeth

Digitized by Google

that had small cavities, and the left inferior first molar had quite a large filling, put in by Dr. Price. It was in the neighborhood of that tooth that the trouble she referred to seemed to exist, but there was nothing that would seem to indicate that it should be located there. Several times when I would be making operations of a minor character, she would complain of this trouble, and again and again I would examine but could discover no cause for it. Dr. Watt has said that very small things, even dropping of water long enough continued, would kill a person. I may, therefore, perhaps be allowed to state this case somewhat iu detail, that we may see that very small things, as they may appear to us, result in very great disturbance to the patient. She was one of those persons that try hard to endure the operations without making much demonstration, but it was very difficult for me to operate for her on account of her inability to hold firm, or even with any degree of firmness. She was one of the worst cases, I think, in that respect, I ever had in my hands, for an adult. She seemed to wilt right down under the slightest twinge of pain, such was the irritable condition of her nervous system. After having worked at the case for perhaps two or three weeks, I let her take a recess for perhaps two weeks. Still the trouble continued, sometimes being quite aggravated, so that she would complain a great deal. On her persistent declaration that the trouble was in the neighborhood of this tooth, I made a more thorough examination, and you will observe by looking at the specimen, when I speak of the case as it presented itself, that the trouble was right in the neighborhood of the mental foramen. My examination finally resulted in finding the second bi-cuspid impacted or imbedded in the alveolus. The molar and bi-cuspid were standing so close together that at first I had no idea that there was a tooth imbedded there at all. There being nothing presented above the gum, I had to make a pretty thorough exploration before I could discover that there was anything there at all. I first discovered it almost by accident; I informed her that there was a part of a tooth, and thought the hard substance I had discovered was merely the root of a tooth. When she came back again I finally forced the gum off and made an opening, and upon further exploration found it was the crown of a tooth presenting itself instead of a root. This was as far as I could go at that sitting. This irritation about the head and face had continued more or less all that time, and for months previous. Before I was able to complete the operation the lady had a miscarriage. Seemingly, the extreme suffering she endured in her face and neck came from the fact of this tooth pressing, as it did, up against these non-resisting sur-

Digitized by Google

faces and the apex down upon the inferior maxillary nerve, which you know is the largest branch of the fifth pair I could imagine no way to get rid of the trouble but to get the tooth out, and from the position it occupied there was no way it could be got out except by drilling it out. I drilled in the top until I tapped the pulp chamber, and then applied a little arseous acid to devitalize the pulp, and then continued drilling. The room between the teeth was merely sufficient to admit the shank of the bur. When I finally cut through at the apex I struck the body of the nerve, and we had a lively time for a few minutes, and I had to suspend operations for that day, as it produced spasmodic tetanus. Afterwards I succeeded in cutting down and separating or dividing the tooth and removed one portion, and afterwards the remainder. The result of the operation has been that after getting over the little soreness from making the operation she has been entirely free, and as she remarked last Monday, she has not had anything of that trouble since the recovery from the operation; and furthermore, she is able to sit and have operations made with comparative comfort, according to her own statement.

Dr. Buffett: Did this irritation or trouble come along before she was pregnant?

Dr. Butler: Yes. The trouble had existed more than a year before I saw her; and she could not have been pregnant that long.

Dr. Buffett, by request of the members of the society, spoke as follows:

I do not expect that I can present any facts or theories that will be instructive to this body. Most of us, and I might say all, recognize a relation existing between the teeth and other parts of the body. The influence that is manifested is through what is termed reflex action; and here we are in the fog. The question comes up, what is reflex action? We know that when a nerve receives an irritation, not only at the point that receives the impression may we have pain, but at other points and centers of the same nerve, or we may have irritation and pain through the sympathetic nervous system, so that injuries received in one organ other organs sympathize with it. Oftentimes persons suffering from dyspepsia have their condition aggravated by irritation to the teeth, and trouble with the teeth may be increased by a dyspeptic condition of the stomach.

It may take but little irritation to an organ to give rise to serious difficulty in those that are of low vitality, and this irritation may be direct or indirect.

Digitized by Google

THE BRAIN MAY ALSO SUFFER FROM DISEASED TEETH.

Cases occur in which those who are subject to epilepsy will have the frequency of the attacks increased by irritation to the fifth pair of nerves. I will report a case of a young man who had suffered from epilepsy from childhood, the frequency of these attacks varying from one a month to one a week, and sometimes oftener. As he advanced in age, his teeth became decayed and some of the nerves exposed, and in two of the teeth the nerves were dead when I first saw him. Any exposure to cold or dampness would result in these spasms. In making the operation, whenever painful, the same result would follow. After the teeth were put in good condition, and all irritation about the mouth removed, he passed some six months without having any trouble.

Dr. Herriot: Did you know the cause of the spasms, and whether he was afflicted with epilepsy?

Dr. Buffett: There is an old saying: "It is known only to the Gods;" but no information received since, nor can I, from my knowledge, tell you why we have these spasms from a certain amount of irritation.

There is a question I should like to ask, not answer and that is: To what extent does the uterus sympathise with the teeth? We know that when there is uterine trouble there is great tendency to neuralgic difficulty with the trifacial nerve, and why does this nerve respond more quickly than other nerves of the head? It is stated by some physiologists that it is the most sensitive nerve of the body, and that in making resections that anesthesia will have to be pushed to a greater extent than for operations upon other nerves. Now, if this is so, what is the explanation?

W. H. Sedgwick: Recognizing the importance of the subject now before us, and listening to the remarks of different members of the society, we also recognize the vast field opened up to us for investigation by the presentation of this subject and no doubt many, if not all, appreciate the fact that this question has not received the investigation at our hands that it should. Then, one of the benefits of bringing this subject before us, will be, no doubt, to draw our attention to it more in the future. There is no healthy nutrition without healthy digestion, and no healthy digestion without perfect mastication. There exists an evident sympathy between the stomach and the teeth, and any disorder of the one is dangerous to the health of the other. Any considerable disease of the teeth is destructive to

Digitized by Google

mastication, thus increasing the liability to dyspepsia, with all its train of suffering, gloomy feelings, despondency and irritability of temper, rendering life miserable, even if it be not curtailed by the imperfection of mastication—the first and most important step preparatory to digestion.

I have known very serious and tedious cases of catarrh, caused by ulcerated teeth and diseased gums, and cured by the treatment and recovery from diseases of the antrum. But a very common and ordinary effect of diseases of the teeth is upon the nervous system, and especially the motor nerves. The motor centers are very liable to be disturbed; we observe this in the frequent convulsions of children while teething, and the ready relief often rendered by the proper and timely lancing of the gums; and I verily believe the death of many of these household jewels which is attributed to the "dispensations of Providence," might be averted by the prompt consultation of the educated and intelligent dental practitioner.

A few years since, having a relative a few miles in the country confined to his bed by a severe illness, I rode out to visit him almost every day. One Sabbath morning I was hailed by a gentleman coming out of a house on the road, asking if I was not a physician. I told him I was not a practicing physician, but was practicing dentistry. He told me their little babe had been unwell for several days, and was having convulsions all the morning, and asked if I would not go in and see it. I stepped in, and found the little patient with a high fever, very hot about the head, and showing every sign of intense suffering, and while I was there it had a very hard spasm. The parents told me it had several that day, and they were now anxiously waiting for the physician. As soon as I could I examined its gums, which were much swollen and enlarged over the superior central incisors. I of course proposed to lance the gums at once, as I was convinced there was the trouble. The mother objected and wanted to wait until the doctor arrived, but I insisted, and finally she gave the child to the father, saying she would not stay in the room. I lanced the gums freely, feeling the teeth plainly under my lancet. We called in the mother, who immediately said she believed the child was better; its eyes lost that glassy fixed stare, and the tossing and rolling of the head ceased, and in a short time it made signs for its food, which greatly pleased the mother. On my return in the afternoon I found our little patient sitting on the floor with its toys all around it. Could any one convince me that difficult teething had not caused the disturbance in this case?

Digitized by Google

But I wish to occupy your time only a few moments more to relate a very interesting case which occurred but a few months since in my own office practice: That of a young woman, where the muscles on the right side of the neck and the right arm were partially paralyzed. She was a strong healthy looking girl of about 22 or 24 years, I should judge, and was accompanied by her mother, who told me her daughter had suffered for several days with tooth-ache, and had applied to a physician in the country to have the tooth extracted, but he had broken it off, since which time the tooth had not ached very much, but her face had been gradually drawn down towards the right shoulder, with the loss of the use of the right arm, and wanted to know if I thought the removal of the tooth would remedy the difficulty.

She took a seat in the operating chair, and I found a very badly diseased root of the second inferior molar of the right side. I endeavored to impress upon the young lady that that alone was the cause of her difficulty, and that the tooth must be removed, and it was absolutely necessary that she should endure the operation, or the effects would keep growing worse and worse, and probably result finally in death. She was plucky, and said she was going to have the tooth out if it killed her.

I commenced the operation, and on the first trial I removed one root of the tooth, when she went into violent spasms, and it was as much as her mother and I could do to keep her in the chair, and it was only by constant assurance that I could convince her mother that she was not dying

As soon as she showed signs of coming out of the spasm, and did recover sufficiently, I took the forceps and removed the other root, against the urgent protestations of the mother, however; she had another slight spasm, but nothing like the first in severity, and soon recovered from its effects.

I received a letter from her, in a few weeks, thanking me for my firmness, and sympathy displayed towards her in her troubles, and assuring me that she was entirely recovered.

To me this case was full of interest, and has, no doubt, been the means of greatly increasing my interest in what has been said on the subject now before us.

Dr. Watt: Mr. Chairman, I hate to see anybody light a torch that makes things about twice as dark as before, and then go off and leave us. I think Dr. Buffett did that when he spoke of some sym-

Digitized by Google

pathetic relations between the uterus and the teeth. Now, if he had asked about two more questions like that, I don't suppose we would know anything.

DR. BUFFETT: I claim that the teeth sympathize with the uterus; now, to what extent does the uterus sympathize with the teeth?

DR. WATT: That is what you want to know. Well, it is a poor rule that won't work both ways, you know. [Laughter.] But, I don't believe there is near as much sympathy between the teeth and uterus as is generally supposed. A literal translation of an old proverb would be, "The woman for the womb." The idea is that the womb having been made, there had to be a woman for it. But the uterus gets credit for a great many things to which it is not entitled, just as many of us get credit for many things to which we are not entitled. Since I have become old and gray, patients talk more freely to me. I find that women are not afraid to talk with me about this subject, and talk very plainly with me about it; and when you come to question them, you will find that in a great many of these obstinate cases of nervous toothache, especially in ladies of nervous temperaments, that pain in one or both ovaries is nearly as common as toothache itself. It is something you don't find out until you come to talk about it. If you will inquire, you will find that there is very sharp pain there. If the physician is called upon he often administers something that gives temporary relief, and the patient is sent away.

DR. CLAYTON, being requested by some member to speak, replied that he was much obliged to the gentleman for the call, but the water was too deep, and he did not wish to make any remarks.

DR. J. TAFT: Mr. Chairman, reference has been made to a good many conditions that are caused, induced or aggravated, in different parts of the body. The principal references that have been made are to the influence of diseased permanent teeth—teeth of the adult. Now, I apprehend that the diseased conditions of temporary teeth, either directly or indirectly connected with the process of dentition, are very important. Dentition is simply a physiological process, and there ought not, in a true physiological development, to be any diseased action; that a diseased condition is the result simply of dentition I do not believe; as well might we expect disease as the result of the growing skull, or of the growth or development of any other bones or portion of the body. Notwithstanding this there are a great many disabilities and diseases that attach to the development, and especially to eruption of the temporary teeth. There are many

Digitized by Google

things that will retard, and sometimes arrest the growth and development of these organs. The retarding of this process cannot exist long without disease in some form. Difficult dentition may occur from various causes. Diminished life force from whatever cause, is prejudicial to the prompt development and easy eruption of the teeth. Interrupted or perverted nutrition always results in tardy and sometimes diseased dentition. The observation and experience of every one here renders more than a bear mention of the facts necessary. A subject to which we ought to give special attention. The affections that accompany dentition are very frequent in occurrence, and oftentimes grave in character. A large per cent. of the children of our race are cut off in early life, before five years of age; perhaps we may say earlier; and a very large per cent. of deaths in infancy is caused by difficult dentition, or diseases produced or increased by it.

Another fact that renders this an important subject is that it is very imperfectly understood, both by the medical and dental professions. It is certainly not understood. The subject in certain directions has been sufficiently investigated by a few to fully establish the fact that great good may be accomplished for the child by proper management of the mother during gestation, as well as by proper treatment of the child during dentition. There seems to be a general impression with men of the medical profession, that dentition is a process that necessarily involves disease Now, I think a more perfect understanding of the subject, and of the law of development of the temporary teeth would enable us to avoid a great many of the difficulties in this direction, and help us to meet and overcome a great many affections to which children are subject during this period. Some of the affections attending dentition are purely of a nervous character; and hence the convulsions that are oftentimes experienced, the nervous system undergoing great shock and prostration. The brain is frequently involved in serious difficulty; and various other organs in the body are susceptible to disease during the process of dentition. The digestive apparatus is very liable to disturbance during teething. Local difficulties are often experienced that should not be overlooked nor lightly esteemed, as inflammation, swelling and suppuration of the gums and the immediate soft parts; yet the systemic difficulties that arise are the great things to be dreaded, that are to be studied and met by the proper kind of treatment.

It is impracticable in these discussions to attempt anything like a systematic presentation of the subjects before us, but if we can stir

Digitized by Google

up and stimulate each other to study these things and put our minds upon them and enlarge our own experience and gain from the experience of others, and from that which is upon record, our object will have been gained.

Dr. Horton: Doctor Taft has struck the keynote on this subject of reflex influences of diseased teeth upon other organs. About 1800 years ago there was a man, named Paul—formerly Saul of Tarsus—who wrote in regard to the members of a certain church that they were "more noble than those of Thessalonica." Now, in what did that greatness consist? It was, as he declared, because they "searched the Scriptures daily, whether these things were so." We have had this subject, or substantially this, if not in the same language, involving the same principles before us from time to time for the past twenty years, and yet I opine that it is in its infancy at the present time, both in the dental and medical professions. Among the masses of the human family who are raising children there seems to be a notion that the family physician is the embodyment of all knowledge upon the subject of the diseases children are heir to, and especially during first dentition. It does not seem to enter their minds that the dentist is the proper person to apply to for relief in such cases. Hence it comes to pass that children by the score die prematurely for want of that attention which an intelligent knowledge of the subject could bestow, and for want of application to the source of such knowledge. In my opinion, where one child is taken to the dentist, in cases of retarded dentition and troubles growing out of it, ten are taken to the family physician, and for want of knowledge of the subject, through improper diagnosis and improper treatment, the patient dies, and of course Providence is charged with the dreadful result. Let us, like those of Berea, search for the hidden motives connected with this subject, and save a benign Providence from the dreadful charge of prematurely taking off the innocent beings whom it places in our hands from time to time—and whom, by a thorough understanding of this subject, we may be able to save to bless the world.

Dr. Herriott: This is a very important subject and one in which we are all interested. We cannot but believe that there is an influence exercised on the other organs by diseased teeth. We have had the evidence of it presented to us here to-day, and if we will go back to the time when we were small boys, and remember how we suffered from the application of our mothers' slippers, when they were sufferers from toothache, we could further testify to the fact

Digitized by Google

that other organs of the body do suffer because of the influence of diseased teeth.

There is this in connection with this subject, that we all need more information in regard to the matter, as all who have spoken on the subject here to-day admit. We must have this education before we can follow these matters out properly so as to become efficient practitioners.

Dr. Herriott also spoke briefly upon the importance of the duty of the profession in giving information to the medical profession on the importance of the specialty of dentistry. He thought if medical colleges were induced to adopt the plan adopted in Indianapolis—that of having a professor of dentistry to teach this specialty—it would result in much good and a higher appreciation of the profession.

Dr. Clayton: There is, as we are all aware, a great deal of ignorance among the medical profession in regard to first dentition. It is a subject that will require of us a great deal of missionary work before we can get them properly to understand it. The child is not brought to us, and we do not come in contact with it, and until the plan which has been adopted by the Indiana Medical College becomes general, we will have to do a good deal of this missionary work in a private way, endeavoring to show them the advantage which a general knowledge of our specialty would be to them, or to have them refer their children patients to us during the period of first dentition.

The child, many times, where the gums are found somewhat inflamed, will be thrown into convulsions. I know that this is generally considered due to the pressure upon the gums. I beg, however, to differ from those who hold this opinion. I believe it is because of the pressure upon the pulp, which is now active in building up the new teeth.

The speaker described somewhat in detail how, in his opinion, in this way, irritation, fever, and spasms were produced.

In referring again to first dentition, he remarked that where one child was brought to the dentist ten were taken to the physician, probably five went to the grave. The time he believed was coming when the medical profession would recognize the specialty of dentistry—they were beginning already to do it.

Dr. J. H. Warner: While there are very many members of our profession who make a thorough diagnosis of diseased teeth, there are very many also who recognise no diseased conditions, except such as arise from decayed teeth. These are the three diseases

Digitized by Google

which are most plainly observable, but there are others which, though they may be obscure, also have a reflex action on other organs of the body, usually in a neuralgic form, which are not so well understood. I do not pretend to understand the subject better than the average of the profession, and it is to induce those who have more knowledge on this subject, to relate their experience and observation, that induces me to say what I do.

Diseases of the teeth are divided into several distinct classes, as follows: Chemical erosion, mechanical abrasion, exposed pulp, periostitis, alveolar abscess, exostosis, and nodular calcification. All subject to subdivision or modification. Here are a number of diseases, some of which it may be difficult to discern. I have heard of many cases where patients have claimed that certain teeth were giving them intense pain, and the dentists, upon examination, have pronounced those teeth sound and healthy. I undertake to say that no man can tell by simply viewing a tooth, whether it is diseased or not. The enamel may be perfectly clear and sound; the gums may be healthy, and yet that tooth have a disease that will necessitate its extraction, or the destruction of its pulp.

In nodular calcification there is no remedy known to me, except the destruction of the pulp. If any one knows of another remedy, I would like to know it. The reflex influence of this disease is manifested in the form of neuralgia, especially facial neuralgia, which is easily treated if correctly diagnosed.

The following cases were given by the doctor: Six or eight weeks ago he had been called to visit a lady at the garrison, who had been suffering terribly for four weeks with facial neuralgia. She had been under the care of one of our leading physicians, but had not been treated for disease of the teeth, because it was supposed that her teeth were sound, as they were not decayed. Upon an examination he suspected nodular calcification, and extracted the left superior molar tooth; the one that seemed to him to cause the trouble. He split the tooth, and found one branch of the pulp dried up, presenting the appearance of sole leather. He informed her that was probably the seat of the trouble. At the end of a week he saw her again, and she said the neuralgia had subsided slowly but surely and she was then relieved. In many cases dentists failed to make as thorough a diagnosis as they should. Too often they judged from the outward appearances that teeth were sound and healthy, when there may be disease at the pulp. These diseases may fail to be recognized, because they are not apparent to the eye.

The Society then adjourned until 7 P. M.

Digitized by Google

LIBRARY
COLLEGE OF DENTISTRY
UNIVERSITY OF CALIFORNIA
SAN FRANCISCO,

SANITARY TREATMENT OF TEETH.

THERAPEUTIC AGENTS ESPECIALLY APPLICABLE IN DENTAL PRACTICE—THEIR PROPERTIES AND USES.

DR. J. TAFT: There are three distinct subjects presented here, viz.: The sanitary treatment of teeth, the treatment of them with the view of maintaining a state of health. The second is: Therapeutic agents, especially applicable in dental practice. Third: Their properties and uses. I will say a few words only on the first part of the subject, and it will necessarily be, to most here, common-place. Still there may be, and I trust there will be some new thoughts brought out on this subject.

The sanitary care, or treatment of the teeth. What can be done for their preservation in the best condition of health and usefulness? The first thing that would strike every one, and that you will all understand is that the teeth should be kept as absolutely clean and free from accumulations and deposits of injurious substances, that may accumulate upon and about them, as possible. And this means more perhaps, than is ordinarily supposed. There are many in the profession who, when a patient is presented, will give attention only to decayed teeth; will examine how many cavities there may be, and what cavities are to be filled, and that constitutes their usual examination. The next point is to proceed to the treatment of these decays in the way of excavation and filling, overlooking many other things that ought to receive attention; thus often neglecting much that ought first to receive attention; for in every instance when at all practicable the teeth should be freed perfectly from all deposits and impurities, and the parts about them put in as good a condition as possible. I mention this because I know it is the practice of many dentists to fill the teeth in the first place and make the matter of cleansing and treating of secondary importance. This, on the part of the dentist is a very important work, and one not easily accomplished at all times. It is not sufficient that he should remove the scales and all calcareous matter. If that only is done, there is a roughness that affords a ready lodgement for future deposit. The dentist should make this work thorough, and after freeing the teeth from all foreign substances, should polish them as perfectly as possible. And the duty of the dentist does not cease with the mere doing of that either. But he should impress upon the patient that he, or she, must keep the teeth in that condition in the future. Then and

Digitized by Google

then only, may there be expected success in the other operations which are performed upon them.

So important is this matter of keeping the teeth clean, and so seldom is it accomplished, that Dr. Morgan, of Nashville, Tennessee, whom many of you know, and who has few equals in the profession, said once, in an address, something like this: "I would go a hundred miles to see a set of teeth perfectly cleansed." That was a very emphatic expression; very strongly put, but it conveys the idea of the importance of the well-doing of this work, and of the fact that it is very seldom done as it should be. It is not only important that the teeth be well cleaned, but that the parts about them be attended to as well. The mucous membrane, by the unequal bearing of plates upon the gums, is many times in an irritable, diseased condition, it is also often made so by deposits on the teeth. The mucous membrane, when affected, always throws out a vitiated product, and in almost all cases that vitiation involves increased acidity, which may incite decay of the teeth, and the decomposition of foreign matter in the mouth, that will result in injury in various directions. It is often a diseased condition of the membrane covering the margin of the gums that occasions, or has concomitant with it, a very marked sensitiveness of the dentine at the necks of the teeth. In all cases where this sensitiveness exists, there is something wrong with the secretions of the mouth. In almost all such cases we find something wrong in the mucous membrane, and, when this is put in its normal condition, this sensitiveness will be relieved in most cases. What are the indications of this state of things? There is not always presented a redness in the parts, sometimes they present a paler appearance than the normal condition, and yet the secretion will be greatly vitiated. There may be no change visible to the eye, and yet there will exist an abnormal condition. How, then, are we to test these fluids of the mouth? It is important to know more than the test paper reveals; to recognize the fact that the blue is changed to red or the red to blue. That is some indication, but there are various other methods of testing the fluids of the mouth and every dentist should be able to analyze these, and to determine at all times their conditions, when so much vitiated as to act directly upon the teeth and produce decay, or promote rapid decomposition of other substances that may be in the mouth. It is not always easy to remedy such condition. Local treatment alone will not always accomplish it; perhaps it will not in anything like a majority of cases. This is a matter altogether too much overlooked by the profession. I will not describe the methods of remedying all this, but will point out a few of the dangers that should be avoided, because

Digitized by Google

it is important that we should know where the danger lies. Local treatment alone is not, in most instances, sufficient. Systematic treatment must accompany it. Sometimes systematic treatment alone is sufficient. Where the cause is the improper bearing of plates, then of course local treatment only will suffice. A patient's teeth, of which I had the care for the last fifteen years, began about a year and a half ago to be abraded. The two cuspids, which were large, strong teeth, appeared as if they had been, on the anterior surface, planed off from neck to point, as if you had taken a chisel and pared down the surface, though there was nothing like decay, or no softening of the teeth. The incisors were in the same condition, though not so much depressed in the center of the cut surface. This trouble progressed so rapidly in the last twelve months as to become alarming. I examined the teeth several times, also the fluids of the mouth by test-paper. At the margin of the gums, about some of the teeth, there would be a change of the litmus from the blue to the red, and about those teeth affected and between them it would always be changed, but the mixed fluids of the mouth would not change the paper. It was quite a mystery to me. His general health was good; he was a gentleman who had taken excellent care of his health in all respects. I could see nothing in the mouth, in the mucous membrane, or anywhere manifestly wrong, except that the process referred to was going on. I enquired as to his diet; whether he was using anything unusual. He said he was not. Finally I enquired if he was using milk. He said he drank a quart of milk every day, and sometimes more; that he had been a liberal user of milk. I asked him for how long? He replied, for a year or two; that he had not always been a great user of milk, but lately he had been. I thought possibly that might have something to do with it, and suggested that he abandon the use of milk entirely. I took a cast of the teeth as accurately as I could at that time. I saw the teeth a few days ago, about six months after the change in his diet, and the abrasion seems to be arrested. I give you these facts, and will not theorize about them. Dr. Watt will do that, perhaps. The condition of his mouth was as I have stated; milk constituted a part of his diet; he has abandoned it, and since that I cannot discover that there is any progress in the wasting of the teeth at all. I am quite anxious to know what the outcome will be. It may not arrest it at all, that is, it may recur again and go right along as it did before. Whether there is any connection between the article of diet referred to and the process going on, I do not know, but that was the only thing I could see to do, viz., to advise the disuse of milk, and that I did. His mouth had always been in a healthy con-

Digitized by Google

dition, no deposit on his teeth for years that I know of. I did not attempt any systemic treatment other than that I have described, if you call that systemic. I did not know what to suggest in the way of therapeutic agents; was totally at a loss what to prescribe.

DR. SIDDALL: There is a matter I wish to mention in connection with this subject, and I scarcely know how to introduce it, unless I do it by introducing a character under the name of the "enthusiastic tooth plugger," which, no doubt, every one of us has seen in his day. I mean by this, the dentist who takes advantage of the patient's want of knowledge of our profession; who will take advantage of a little girl, or boy who has been brought by a parent or guardian and placed in the dentist's chair, who wantonly cuts away every natural groove and indentation, in order to fill, for money, the apertures he has made. That there are such things done we know. And that I may convince you of this fact I may be permitted to relate a little occurrence that took place about fourteen years ago, when I was a boy in the profession. A farmer brought his daughter to my office and asked me to examine her teeth. I did so and found six small cavities and told him that I would fill them for twelve dollars. I noticed a disposition on his part to go away, and presumed it was in consequence of my youth and of a lack of confidence in me. I suggested that there was another dentist in the place and if he chose I would show him where the office was. "Very well," said he. I did so and he went to this elder brother in the profession, and I saw no more of him. That evening I saw this dentist and said to him, "I sent you a patient to-day." "Yes," said he, "the old man and the girl." "Yes," said I; "what did you do for her?" He replied, "I filled thirteen cavities for her and got twenty-six dollars. But," continued he, "there were no thirteen cavities there. I could find only six, but there were lots of those little points and indentations, that you can fill and it pays." These were the words of a dentist who bears a diploma from a reputable dental college. To what extent such things are done we can only judge by what we see.

DR. J. H. WARNER: Mr. President—One or two things suggest themselves to me, and I presume they will to every other member of the profession; and that is the instruction to be given our patients relative to keeping their teeth in a normal condition. Admitting that the first thing to be secured is absolute cleanliness, I wish to touch upon the proper method. A brush is one of the first things, and its proper use constitutes the first portion of the instruction to be given, in my judgment, after the teeth are placed in a healthy condition. There is one thing which seems to be of paramount impor-

Digitized by Google

tance, and that is, that every patient should be instructed to follow the natural order in chewing upon both sides of the mouth. It is frequently the case that persons will use one side of the mouth in chewing to the utter exclusion of the other. Where there has been no decay and no exposed pulp, the tendency is to use both sides of the mouth. That is the normal method. But if decay supervenes, or the teeth upon one side become tender and it is painful to chew upon that side, the work of mastication is thrown upon the other side. The teeth on the side that is not used soon become covered with tartar and it requires but a glance to tell upon which side any patient chews when such a condition exists. The patient, if not advised of the injury he is doing, will go on chewing entirely upon one side, never dreaming that the other ought to be used, thinking if they chew their food well, that is all that is necessary. All will agree that the patient should be instructed in regard to this matter.

Many members recommend the use of floss silk and tooth powders. Floss silk is very good, but for many years I have been using rubber dam, cutting it in very narrow, thin strips, not much thicker than floss silk, cutting it narrower at one end than at the other and drawing it between the teeth. I never found anything that produced more thorough cleanliness than this. I never have any fears that the teeth will not be kept in good condition, after they are in a normal condition, if I can pursuade the patient to chew on both sides of the mouth and use this rubber dam and brush thoroughly once or twice a day.

Wherever I have found undue sensitiveness of the enamel or dentine, I have usually resorted to lacto-phosphate of lime; there is nothing in it to injure the teeth and it gives relief in almost all cases, continuing its use sometimes a week or a month. It is used as any tooth powder.

Dr. Watt: The injurious influence of salivary calculus, or tartar about the teeth and margins of the gums, and the importance of knowing the condition of the fluids in the oral cavity have been referred to. There is one thing in connection with this which I have noticed and insisted upon, which I fear is not much recognized by the majority of the profession. I have been trying to call the attention of my professional brethren to this more particularly for the last two years than before, perhaps because I have understood it better from recent researches, and also, perhaps, because I have been better able to do it than I was for a while back. But I suppose you have all seen mouths where there is no salivary calculus deposited upon the teeth at all, and where the margins of the gums are healthy, and where patients will tell you,

Digitized by Google

even if they are fifty or sixty years old, that they have never used a tooth brush, or washed their mouths. It is not necessary to tell such persons that if our hands were treated in the same way our finger nails would rot off. But where you have found that condition you have found a very healthy state of the buccal fluids. But the most dangerous condition of the fluids of the mouth, if examined by test papers, seldom gives any alarm. In a great many cases, a neutral response to the test-paper is given; and according to my observation, an alkaline rather than acid reaction is found. Nevertheless it is that condition of the mouth which causes the precipitation of lime salts from the buccal fluid; in other words, it is an approach towards scurvy. Now you all know that the popular term to describe this condition of the gums, with calcareous deposits about the necks of the teeth, is called scurvy; and the cause of this deposit is a condition in the direction of genuine scurvy I think ropy saliva always accompanies the condition I am speaking of. If you smell the breath of a person in this condition, you will discover the presence of ammonia. In the normal condition of the saliva carbonic acid holds the lime salts in solution, just as in spring or well water. In the action I have described as going on in the mouth, the lime salts will be precipitated, just as you have seen the carbonate of lime precipitated on a tea-kettle. You have precisely the same thing in the fluids of the mouth. If the buccal fluid is in a healthy condition the lime salts will always be held in solution, but if the free carbonic acid is removed by any process whatever, they will be precipitated, and as they cannot lodge on the mucous membrane, they will deposit on the teeth, or on a plate, if there is one there as a nucleus.

Now what to do under these circumstances—the most important thing I have ever told you, and if followed up it will do you good and do your patients good, long after I am in heaven I am sure—is to guard against this formation of ammonia. Now how are you going to do that? Well, just do the way they don't do in girls' boarding schools. Just as surely as the American race use too much salt, they use too little vinegar. The disposition is to have life all sweet. The popular notion is because dental caries is produced by the action of acids, and as vinegar is simply diluted acetic acid, it is bad for the teeth, but there are ninety-nine cases where teeth are destroyed for the want of vinegar, to every one that is damaged by vinegar.

Dr. Herriott: How do you explain the fact that the Irish have such good teeth? Because they use a greater amount of acids?

Dr. Watt: They do not do it, and they have not good teeth. That is the way I explain it. I know from actual observation that

Digitized by Google

they have worse teeth than Americans. I have taken particular pains to notice them as soon as they come over to this country. So have the negroes worse teeth than the white race; so have the Indians, those I have seen of them—though I have never had an opportunity of seeing the teeth of the real wild Indians. But there are a great many mistakes about this matter. There is a popular notion that the Germans have such good teeth, but they are not as good as those of the Americans. Mothers have better teeth than they had twenty-five years ago. Mothers nursing babes now have better teeth than mothers nursing babes had when Dr. Taft and I entered the profession.

The most important thing I have ever told you verbally, or in writing, is this ammonia question—about the presence of ammonia, and the importance of guarding against it. It is the devil that does more to destroy the teeth than all other agencies combined, notwithstanding that caries is always the immediate result of acid. You never in your life found white decay in the teeth, that was not caused by nitric acid, which was formed by the oxidation of ammonia Now you must get rid of this ammonia. Sometimes, however, you find a mother that would no more let her daughter eat pickles than poison. And sometimes you may be interfered with in carrying out the proper course by some obstinate fellow who is running a college. Sometimes I have been obliged to have the young lady removed from the college, and have given instructions that they are to have all the vinegar they want. If they eat pickles I instruct them to chew them thoroughly; if they do not want to eat pickles, I advise them to use strong cider vinegar diluted with water, and sip it with crackers or bread. If this is done there will be no more of those spider webs of ropy saliva coming from their mouths. I do not always insist on the vinegar, but some acid. There is nothing else as good as vinegar. Acetic acid is the best antidote of all the acids. Sheep sorrel is good, so is pie-plant, strawberries, etc., lemons also are good.

Dr. J. Taft: I was just about to ask a question in reference to the influence of acetic acid in effecting the object here. The doctor has partially answered it in his remarks. That is, as to what is accomplished by the acid. Merely to say that it prevents this condition does not answer the question. The point is what it does; whether it prevents that kind of decomposition of this organic matter, or whether it prevents the rapid decomposition of it in any form or not; or whether it serves as an antidote to the ammonia after it is free was

Digitized by Google

the question that occurred to me, but you have intimated that it prevents the rapid change or decomposition.

DR. WATT: Yes, sir, and neutralizes the ammonia already formed in the blood—neutralizes it and forms acetate of ammonia, a neutral salt, giving tone to the system and arrests the dying of the tissues.

DR. TAFT: Another point to which you referred, that is in the oxidation of the ammonia, the union of the oxygen and nitrogen, the hydrogen being set free in the ammonia, that being oxidized, both of these agents being in their nascent condition, they act more energetically; and the water thus formed unites with the nitric acid and makes a more energetic compound than would be formed by the mere combination with the nitrogen.

DR. WATT: Yes; I only alluded to the white decay, because I wanted to direct attention mainly to the influence of ammonia in causing the precipitation of tartar.

DR. FRENCH: I would like to ask if the acetic acid has a tendency to lessen the deposition of calculus?

DR. WATT: Yes; by preventing the liberation of the ammonia in the salivary glands, and if there is any ammonia given off it will neutralize it.

DR. FRENCH: The reason I asked is that I find when I eat pickles or use vinegar myself, I have very little salivary deposit, and my advice to patients, where they have large deposits of tartar, is to use acid. Some say they do not like vinegar, but can eat pickles. I tell them better that than not to get the acid at all. I have found my advice in this respect has produced very good results. I am inclined to admit that I have made this matter of cleansing teeth almost a hobby. I have always been taught that cleanliness was next to godliness, and I take special care in cleaning the teeth of patients that come under my care. Dr. French then cited a case where, by particular pains in cleansing the teeth of a lady who was suffering from pain in her teeth, though they had been filled a couple of years previous by another dentist, he succeeded in entirely removing the pain. He attributed the pain to the neglect in not cleansing the teeth. The teeth also that were loose were, by this cleansing process, made firm in their sockets.

DR. WATT: Dr. French's suggestion to eat pickles is also my suggestion. Where I cannot get them to use the vinegar, or pickles, because of the false notion of the mother in this respect, I sometimes write a prescription for acetic acid and water, and have them send to the druggist, and gain my object that way.

Digitized by Google

DR. BUTLER suggested that Dr. Palmer would give the society some of the results of his experience in this matter.

DR. PALMER: Mr. President and gentlemen, I can only state that I have suffered quite severely from deposits on my anterior teeth. Dr. Butler removed the deposit and I was relieved by it, though not until quite a time passed over. It had gone so far that I feared I had lost the pulp in the tooth. It is still quite numb, so that I can scarcely tell that it has the life in it it had before, and seems quite different from the other teeth. A small nodule, or deposit, was pretty low down on the anterior surface, under the gum, and the inflammation arising from it was so great that I could scarcely endure it, and every time it was renewed it hurt me most intensely that I thought I should have to give up under the operation. The pain from it extended so that it hurt me all over. I was in a very uncomfortable condition.

DR. BUTLER: This subject all seem to regard as one of considerable importance. Some, however, seem to give very little attention, as has been remarked by Dr. Taft, to the cleansing of the teeth and to putting them in as good condition as possible, and regard this as a minor or secondary thing to filling. I think you will all remember a fact mentioned by one of the most successful practitioners in the east—Dr. Dunning—who has been somewhat eccentric, or an enthusiast, would be, perhaps, a more proper term. Speaking about putting the teeth in a good, thorough condition, so far as cleansing is concerned, I heard him remark, once, that unless this thing was done before dismissing the case, we had neglected to do one of the most important services the operator could render to the patient. In many cases the extent of the abnormal condition presented in the mouth is one of intense decomposition going on there, and breaking down the soft as well as the hard tissues with a great rapidity almost defying our efforts to check it, as though a person were going into decomposition while alive; and I am very glad to hear Dr. Watt say this thing may be corrected in a very great measure. There seems to be need of a better understanding of what the condition of the fluids of the mouth should be to keep this normal condition that is so requisite for the preservation of the teeth, as well as the general comfort of the patient. The fluids of the mouth —the saliva and mucous—taken into the stomach in this depraved, befouled condition, certainly must be more or less destructive and deleterious to the general health.

I wish to refer to a very peculiar case of a person who had been in

Digitized by Google

the hands of a noted, and I will say, notorious, operator, named Bing. I apprehend that the first cause of difficulty in the mouth was this concretion of calculus about the necks of the teeth. It had taken hold right in the neighborhood of the superior lateral and cuspid. In this case, he had evidently cut right up into the alveolus a wide space between the cuspid and the lateral and central, also the inferior teeth. The dentist, no doubt, supposed he was doing a wise thing in making these free spaces. The transverse and alveolar process about the neck of the lateral and the proximal side of the cuspid was cut out at least to the depth of an eighth of an inch, and between them more than that—one-fourth of an inch; and down in these little pockets I found, with all the effort that had been made to correct the difficulty, it seems he had not hit the trouble, or, if he had, it had recurred, and there was this concretion of lime. The case had been through the hands of several; one physician and dentist at Munich had tried the case and said it was hopeless. Bing said he would remedy it if the patient would give him $300. I don't know how much money he spent with him, but it was not corrected. I have given the condition of the case just as it presented itself. The main portion of the mouth was in a comparatively healthy condition, except just at these two points, one above and one below. The subject was a man of a very good general physical constitution. He was an inveterate smoker of cigarettes. The reason the dentist gave for making these separations was that he supposed they might be self-cleansing. The main course I pursued in endeavoring to correct the trouble, I will now state. I removed carefully all the accumulation of lime about the necks of the teeth, and down on the roots, at considerable pains, and spent time to do it as carefully and as thoroughly as I knew how, after which I applied aromatic sulphuric acid two or three times; then taking about two drams of pure carbolic acid and charging that with at least twenty grains of crystal of chloral, I applied that to the gum with a piece of cottonwood whittled down so that I could reach to the bottom of the pockets. I applied that every other and every third day; that is, I applied it oftener than every fourth day. That is all I used in the way of local applications to remove the lime, and in correcting the suppuration which was present, on the upper side, when I began, was all done away with, and the gum entirely healed up within two weeks; but, of course, the deep cleft remained, the alveolus being gone; the man was very much better—more than a hundred per cent. better than when he first presented himself. The gum on the lower side was nearly well when he left for Europe.

Digitized by Google

DR. KEELEY: Were the teeth loose?

DR. BUTLER: The superior lateral and inferior lateral, especially, were quite loose, but the superior ones became quite firm again, the tissue about it being apparently healthy. Of course the periosteum on the sides of the cuspids and laterals, on proximating sides, or between the cuspid and lateral had been denuded.

Now, perhaps that would have been set down as a genuine Riggs' disease case. I don't go very much on that particular kind of diseases.

By permission of Dr. Palmer, I would say he has had two or three attacks of a similar character, but the one I refer to is the most difficult one. There was one of those little rough nodes, or granular surfaces of lime, which was very hard; what might be called the black tartar; and it was down at least half the depth of the root, I think the anterior side of an inferior lateral, and had resulted in a little abscess, so that it worked through the plate of the alveolus, just below the deposit; and in passing up and down between the root and this deposit left just a slight passage, and it required considerable force to remove it, and, as he said, produced intense pain.

DR. WARNER: I would like more information upon this subject, but I don't know whether Dr. Watt will feel willing to enlighten me, or any of the rest, if there are any of the rest who need to be enlightened. But I would like to know to what extent this disease may be regarded as a cause or *result* of general constitutional derangement.

It is sometimes termed Riggs' disease. You may term it calcareous deposits, or whatever you please, but it is a deposit. I am reminded by Dr. French's statement, of the case of a young lady in Michigan, whose teeth were loose in the sockets, because of this deposit on the roots. The young lady, at that time, was otherwise apparently in good health. I have studied this disease more thoroughly since, and am satisfied there was a general breaking-down of the system, though, apparently, the patient was in good health, except the teeth. She lived four or five years and died at the age of thirty.

There is another case—A judge of the Ohio Supreme Court was troubled in the same way. His teeth were loose, and tartar was evidently deposited clear to the ends of the roots; they were loose in their sockets, and, without any decay, the pulps died in the teeth. I was compelled to drill in a tooth that had no cavities, to prevent alveolar abscess. He resigned his seat upon the bench, and went to

Digitized by Google

California, and died within a year. There seemed to be a general breaking-down of the system; and I have noticed that peculiarity in all the cases I have treated. I have now a case that is similar, but it is confined to the central incisors. I attribute this to heroic wedging. The reason is the centrals only are loose in their sockets. In the other cases the teeth had not been filled, nor wedged, and there was also this breaking.down of the constitution; it seemed to be a note of death warning to the system. I would like more light upon the subject, and whether local treatment of the mouth, in addition to this acid diet of pickles that Dr. Watt speaks of, would be regarded as sufficient to overcome the difficulties in these cases.

Dr. Watt: Mr. President—Last Sabbath week I rode out, after church, with a friend to prescribe for a hog. It had erysipelas. I do sincerely hope that if you ever see a hog in the same fix, you will not say, "It is suffering from Watt's disease." [Laughter.] I have got no title to it, for the hog has got well; and I suppose that the majority of Dr. Riggs's patients get well. You might as well call the disease "Smith's disease," or "Hunter's disease," or anybody else's disease. They would all have it if they undergo the conditions to obtain it, and I suppose all would be treated for it. I hear of nothing else done by Dr. Riggs, except to scrape the teeth and clean the alveolar process and the teeth as far as denuded, but to do that well. I believe that he does it thoroughly. I don't suppose that that is all that is necessary, any more than I suppose that vegetable acids are all that is necessary for everybody that is broken down in constitution and going to die. Vinegar and vegetable acids are good, every time, if the digestive apparatus can use them. If the alimentary canal will take up these fluids at all, into the circulation, they will correct that ammoniacal condition, which is that of the tissues dying faster than the excretory organs can remove them. The patient has already begun to die when that takes place. It is to obviate this tendency towards death—this tendency towards putrefaction, by introducing an antiseptic. If the result of this putrefaction should be alkali, if you can, at the same time you neutralize it, introduce an antiseptic, you should do it.

Now, if it has been understood that I mean that all are going to be cured by vinegar, they have misunderstood me. Always, every time, from now as long as ammonia and acetic acid exist, the one will neutralize the other, when they are brought in contact, in the system or out of the system; in the mouth or out of it; in the blood or out of it; just as really in the blood, or in the glands, as in a vessel in the chemist's laboratory. The fact is that the acid will

Digitized by Google

neutralize the alkali, and the lime salts will not be precipitated from the fluids of the mouth about the necks of the teeth, so long as there is any reasonable quantity of free carbonic acid held in solution in the fluids of the mouth; but you cannot have that free carbonic acid there and ammonia there too, because they cannot exist in the same fluid without combining. Of course, in every instance, the vital force is badly worsted. There may be a very energetic constitution, one that will arrest the process, and there will be a self-recuperation. The natural forces of the constitution may rapidly recuperate when you stop the process, but, before this, the gums may be in such condition as to be no longer firm enough to hold the teeth, before the constitution has very materially suffered. If it has been a strong man or woman, the general injury to the constitution may not be so noticable. I have seen a man of sixty, sometimes, who says he is as active as he ever was, and could run about as swiftly. A man told me this only a few days ago, and the only reason he was not lying is that he was honestly stating what was not so, because I knew that when he was young he was an active foot-racer—about the swiftest runner in the county—and I knew that he could not run as well now as he could then.

I think that Riggs's mistake is this, if I understood him correctly, that he relied wholly and solely on his local treatment. That will not answer in nearly all of the cases; in a great many of them they will go on down. The blood is impoverished, and carries a foreign matter that is dangerous. Do you suppose you can strike the blood without striking the man's life? Physiologists, after having made a great many experiments, have settled down on the Bible statement that the blood is the life; and when the blood is giving off this abnormal matter, more than the kidneys can take care of and expel, your patient has begun to die, and you may just as well recognize that fact.

I have to burn phosphorus to think, while to walk, or to use the muscles of the mouth in talking, I must use hydro-carbons. Well, now, you cannot burn phosphorus without making phosphorus acid; you cannot burn hydro-carbons without making carbonic acid and water. But when you begin to find this alkali where it is not normally found in the excretions, the system is dying. It may be built up again, but it is dying, that far, and it is best to stop the process. But don't understand me that I have suggested that the acids will keep people from dying, because some of them are going to die in spite of acids; and if Rigg's disease will kill a man, he will die, of course; and if he recovers from it he may live until some other disease kills him.

Digitized by Google

DR. J. H. WARNER: Your answer has been full for the time you have had to explain, but what I wish to know is, whether the cause or the effect is general and constitutional derangement.

DR. WATT: It is both; general and constitutional derangement is the first effect. Primarily the cause is always constitutional; in the physiological condition it is always; it is not local; you could not get a condition of an excessive and injurious deposition of the salivary calculus in any constitution with a proper balance; for the constitution has to be deranged before that could take place.

DR. TAFT; The discussion has been mainly upon the first division of this subject, except so far as reference has been made to curative agents. There is one thought further in regard to sanitary care of the teeth of children. Attention in this direction should begin early in life. The manner in which the teeth are used has been referred to by some one, particularly with adults; but the manner in which they are to be used by children is, perhaps, quite as important, and I think more important, from the fact that habits formed then will continue during life. And especially is this true with reference to the use of the teeth and of the jaw. A great many children of three or four or five years of age, after they begin to eat solid food, from some cause or other, either because they do not receive the food which requires a proper exercise of the jaws, or from some condition of the teeth in the mouth, use but one side of the mouth, and fail to use the teeth as nature designed they should. Now, when the child begins to have teeth of considerable strength, even the temporary teeth, the indication is that some resistance in mastication may and should be employed. The size, form and attachment of the masticatory muscles indicate this; and the whole masticating apparatus is so constructed that a very considerable amount of force can be exerted by it upon solid substances between the teeth. The teeth are made to crush, and to grind and comminute that which is placed within them. How is it? Perhaps a large share of the children of this age—from three to ten—receive food only that requires no special exercise of the jaws for its mastication. Many foolish mothers give only soft food to their children, that requires no exercise of the jaws, so there is no opportunity for exercise. They will have disease in some form attacking the temporary teeth; there will be more or less irritation about the gums and soreness, and especially when they are loose in their sockets. This will necessarily lead to the disuse of such teeth. And this will be more the case if they have not been used and made strong by exer-

Digitized by Google

cise. The proper exercise of the teeth at this age adds strength to them and strength to the parts in which they are placed, gives increased strength to the arch and jaw as a whole. The lower and upper teeth come together in such a way as to expand each jaw if they are pressed firmly together, and when they are grinding. Especially in the lateral motion there is a tendency to expand both the upper and lower arches of the teeth; and you will find by close observation, that those persons who masticate solid food, unless there is some manifest hereditary peculiarity, and even that could be remedied to some extent, have strong jaws and teeth. It is found that those who use the teeth but little have weak, narrow jaws and imperfect teeth. In the case of the tobacco chewer, who has munched tobacco from youth to old age, generally has strong jaws and firmly-set teeth, if they are not subject to other difficulties. How do you treat irregularities? Simply by pressure you expand the jaw, put in a plate so as to expand the jaw and move the teeth in the desired direction. All this is readily done. Dr. Keely can tell us all about it. When the correction is made it stands, showing that nature is very glad to have this assistance and aid if she can. When they are kept in position a few months, the new position will be maintained. If this is so, what may not be done in ten or twenty years' work by rightly exercised mastication?

Dr. Warner referred a while ago to the use of the teeth on both sides alike. This is a very important matter, and should be impressed upon the minds of nurses and mothers, to have the children use the teeth and masticate on both sides thoroughly. This would tend to the general health of the system, and the digestive functions would be far better, and in all respects there would be great gain.

Dr. J. H. Warner:—I wish to add to what Dr. Taft has said, that this thorough mastication is necessary to the proper insalivation of the food, as the salivary glands are brought into constant action. It is only by bringing those muscles into action that these glands can be pumped out. And if the chewing is conducted entirely upon one side of the mouth, it stands to reason the glands on the other are not brought into action as they would be if the chewing or mastication is conducted on both sides.

The Society adjourned until 9 A. M.

Digitized by Google

LIBRARY
COLLEGE OF DENTISTRY
UNIVERSITY OF CALIFORNIA
SAN FRANCISCO.

SECOND DAY—MORNING SESSION.

THURSDAY, Dec. 6th.

The discussion of the topic under consideration at the close of last evening's session was resumed.

DR. J. TAFT:—Mr. Chairman, the first part of this subject was discussed last night, and the second part to some extent. This latter part may be discussed under two heads, and I apprehend that the discussion will mainly include both ideas; that is, the history of therapeutic agents, and, secondly, their properties and uses. It is not a very easy matter to enumerate the therapeutic or medicinal agents that are especially applicable in dental practice. An agent, perhaps, which would be good in the hands of one, would not be serviceable in the hands of another, and the agent or property that is available or practicable in one case is not suitable for another. In studying therapeutics, especial attention should be given to their properties and capabilities, and following this, study their action upon living tissues and organs, in both disease and health, remembering all the while that there are in both these states ever-varying degrees of susceptibility. The question, what is to be accomplished? is always appropriate, when therapeutic agents are to be used; and another equally pertinent question, Is the agent in hand the best? Too frequently the answer to this is, "Oh, I will tell you after I try it." With such, medication is only experiment.

The subject of stimulation is a very interesting and a very important one. Stimulation is either general or local. It is effected by excitation of the nerves, or nerve centers, in any given territory, producing exalted activity, and by this means the vascular and muscular systems are reached, and increased action in them, and especially the former, is often of vital importance; and the process we should understand well. The control which the physician may exercise over our stimulation will be definite and effective in proportion to his familiarity with the agents by which it is produced. In the circulation stimulants are very important agents. A large variety of therapeutic agents act as stimulants. Some act on one part more definitely, some upon another. Some spend their force as stimulants upon the capilaries; others affect the heart more particularly; others increase the energy of nerve action; some the action of the lympathics and absorbants. All these functions may be stimulated by proper medication. The precise mode of action of the various stimulants upon the various organs, is not very clearly and definitely understood. Various theories have been proposed, but none so fully

Digitized by Google

established as we could desire; but this fact, instead of discouraging, should encourage us to prosecute investigation.

Escharotics are used much in dental practice. Escharotics are those agents that by chemical action superficially destroy organic tissue. An escharotic used upon a living tissue produces an eschar; hence the name. In the use of these agents the aim is to break down or destroy a tissue that cannot be restored to a healthy condition, and relieve the living part beyond that of the injurious influence of the diseased tissue. Chloride of zinc and nitrate of silver are true escharotics. They destroy, so far as they act upon the substance, but do not cause a changing or sloughing off of the tissue beyond the point of action. Many of the acids act as prompt escharotics.

And next disinfectants; those agents which break up and destroy those compounds which are very offensive to the sense of smell. Disinfectants destroy offensive odors, and so destroy their power for harm to the sense of smell, or to the sensitive tissue. These odors are very often of an irritating character, when brought in contact with the living tissue. There are many things that will accomplish this destruction of offensive and injurious material. Disinfectants may accomplish this in two ways: By breaking up and decomposing, or, by uniting with the offensive matter and holding its elements inert.

These offensive materials oftentimes produce severe irritation and inflammation. The debris from dead, decaying pulp is sometimes very repulsive, and quite disease-producing to the periosteum or any living tissue with which it comes in contact. This is one very fruitful source of periostitis and alveolar abscess. Some disinfectants are applicable in one place, and some in another.

The next I notice are antiseptics; those agents that will prevent decomposition of animal matter. Dr. Watt referred to one, that is, acetic acid. That is a good antiseptic, as every house-wife knows, and as every one knows who has used it. You have in various kinds of pickles this antiseptic property of acetic acid, which preserves in a remarkable degree. You take a cucumber or apple and let it lie in the air, and it rots, decomposes, after due time; but you put it in pickle, and it is preserved. There are many agents that may be used for this purpose.

Then come narcotics, those agents that will produce stupor; that will diminish sensibility and exalted sensitiveness. I would advise that we give especial study to the subject of tonics, those things that impart vigor and strength to the organism.

Dr. Smith: I would like to ask you the therapeutical action of iodine?

Digitized by Google

Dr. Taft: Well, it is a stimulant, and, to a certain extent, an escharotic. A stimulant, especially, to the action of the lymphatics and absorbents, as you know it is used a great deal for that purpose. That is the principal mode of its action, as I conceive. The particular mode of its action to accomplish the work for which it is applied, perhaps, is not understandable in all its details, but we know that its action upon abnormal growths causes their removal. It is used largely for such purposes. It is a solvent that breaks down the tissue that constitutes the diseased enlargement, which must be broken down and dissolved, so that it can be taken into the various emunctory channels.

Dr. Watt, in answer to a question by Dr. Smith, as to the constitutional and local effects of the use of iodine, detailed at some length the principle upon which iodine acts. He remarked that in facial neuralgia, when you could not find any satisfactory explanation in the condition of the teeth, and think it may be from malarial influences, he used quinine or eucalyptus, or some of those agents that will overcome malarial influences. If it does not seem to rise from this cause, he suspected there was a pressure somewhere on the trunks of the dental nerves; perhaps they were passing through some bony tissue. This would give rise to pain, sometimes, where nothing could be found wrong with the teeth. In such cases he would use the iodine treatment very persistently for from one to three or four weeks. He did not like the heroic doses that some members talk about, but was in favor of giving milder doses, so as not to interfere with the digestive operations. He would give from four to six grains of iodide potassium daily.

On second thought, at the risk of being regarded as egotistic, he wished to say that he believed it would be profitable for all, as he knew it was for himself, to read once a year the first article in the tenth volume of the Dental Register. It was by far the most carefully written article he had ever prepared for the profession. It was written at the request of some of the older members of the profession, when he was somewhat younger than he was now. He said that more than once, after commencing a sentence in that article, he had to experiment, during his leisure hours, for more than two weeks before he could finish it. Though he might change somewhat in it, if he were writing now, yet he thought the more they studied that article,—the younger members of the profession, especially,—the more they would get out of it relating to the subject under discussion.

Dr. Jennings: Inasmuch as you would apply iodine in a thickening condition of the teeth, in a hypertrophied condition, what would be your objection to using it in abscesses?

Digitized by Google

DR. WATT: I do sometimes use it in abscesses, but sometimes you may get up too much inflammation. In other words, the treatment would be, in some constitutions, too heroic. In other cases I would frequently use it.

DR. JENNINGS: I have applied it in cases of abscesses, and found a great deal of discoloration, which was very difficult to remove.

DR. TAFT: There is another thought in reference to this: we can not always conclude that because a certain preparation has acted well in one case, that it will do so in all other cases. Some are apt to think that because an agent will act well in one case, it is the best thing in others. It is true with regard to a great many therapeutic agents; they will give one manifestation in one case, and be quite different in another. This is, perhaps, quite as true of local as of general applications. Still, this is a matter that we all ought to understand; and a man that uses these things empirically, without knowing what is accomplished by their use, is likely to apply them in all cases about alike, and expect that they will act just so in every case. This is hardly true of any therapeutic preparation.

DR. FRENCH: If you would give even but from four to six grains, would it not, in some cases, produce salivation?

DR. WATT: Never, unless the constitution is impregnated with mercury; in that case you will find the iodine setting free the mercury—liberating it from where it has been lodged, and comparatively inert.

DR. FRENCH: But patients who have never taken mercury in their lives are sometimes salivated in this way.

DR. WATT: I have had such cases, where patients have said they had never taken mercury, yet I could detect mercury in the buccal fluids. There is this about it: no man who has taken medicine at all can tell you he has never taken mercury, because people are swallowing it in empirical nostrums all the time. For example, Swaim's Panacea contains mercury, in the form of corrosive sublimate.

DR. SMITH: Dr. Watt, I desire to call attention to the topical action. I have read an article on this subject a great many times. It was suggested by Prof. Barker, some years ago. It has reference to the use of the actual cautery by Dr. Stellwagen. I don't know that I can explain the action, but it is certainly very efficacious in cases I know of, particularly in the treatment of sensitive dentine. I would like to hear from any others that have had experience in reference to this. You know it is applied gradually, by raising the

Digitized by Google

temperature, introducing the ashes, and finally the live coals. A patient can bear a great deal, if brought to it gradually, in this way. It dries out the cavities thoroughly, so that they are in a condition in which they can be operated on and produce a much less pain. The alkaline property of the ashes might produce some effect there.

DR. BUTLER: I recollect the statement of Dr. Stellwagen referred to by Dr. Smith. I have never tried it in that way, but have used the air syringe, having a pipe with a fine opening, heating it up, just beginning at the low temperature, and gradually raising the heat so that the air, while it is hotter than you can bear against your face without feeling it smart a little, will go into the cavity of the tooth so that it becomes thoroughly dry, and it is more practicable than this other mode, and the effect upon the dentine is quite as marked. In some cases where I applied it, I could perform the operation and could drill with far less manifestation of pain on the part of the patient than before the application.

DR. SMITH: What is your explanation of the application, and the philosophy of it?

DR. BUTLER: My explanation would be that the moisture on the surface of the dentine was thoroughly removed, and that the degree of the temperature was such that it had coagulated, the contents of the tubuli.

DR. TAFT: That method of treatment is about twenty-three or twenty-four years old, I should think; that is, the warm air blow-pipe, throwing a jet of warm or hot air, as you may choose, thoroughly drying the cavity; and you can accomplish the same thing as is accomplished by the warm ashes, as described by Dr. Smith. It was devised by Dr. Watt more than twenty-three years ago, and all the patent warm air blow-pipes have been founded upon that. The principle is to make a thorough drying out of the moisture. When wholly deprived of moisture, there is very little sensitiveness. That is all, I apprehend, there is in applying the ashes. Sometimes they apply the burning coal, and cauterize the living surfaces. You can do that with a warm air blow-pipe, by making it very hot; heating the air cylinder and forcing the air gently through it; you can make it so hot as to burn the skin in a very few moments. It is a good method of reducing the sensitiveness. Of course, when the moisture returns the sensitiveness will return also, and may become as sensitive as before, but a repetition of the process is entirely practicable and effective.

DR. SMITH thought there was probably a difference between the

Digitized by Google

two methods; that while both would destroy the moisture, he thought, perhaps, there was less liability of a speedy return of the moisture in the Dr. Stellwagen method.

DR. WATT: The present instrument is very clumsy; the nozzle is comparatively coarse, and the orifice in it large; it ought to be much smaller. I have never seen one in the market anything like as good as the first one made, which is probably still in use in New York City. Its nozzle is exceedingly small. If you blow slowly in this instrument, the jet is warm, but if you blow very hard, it is cold. Cold air will dry a cavity, but even if you have the instrument very hot the air is cold when it gets to the tooth, if you blow hard. I think it better to use this instrument than to burn with the hot ashes. In that way you cannot tell so well what you are doing, and you can easily cook the tooth with the instrument, if desired.

DR. HERRIOTT: I wish simply to say that the hot air syringes which are now in general use, were not intended for the purpose of cauterizing the dentine, or any other tissue. The design of this instrument is simply to dry the cavity, and that it will do. Dr. Watt is perfectly correct as to the effects produced by blowing forcibly or slowly.

DR. J. H. WARNER: It seems that many of the remedies proposed as a specific for sensitive dentine are liable to very grave objections. I apprehend that there is no object to be gained from actual cautery of the dentine except to obviate the pain in filling the teeth; and if the remedy is worse than the disease, you have gained nothing. It is admitted that the dentine should be thoroughly dry to secure a permanent filling; and this can be secured without pain. I have found nothing so good as a sharp excavator, skilfully handled. If I cannot operate with ordinary comfort to my patients, without it, I administer internally from ten to thirty grains of hydrate of chloral in a solution of simple sirup. I have never found anything superior to that; it gives almost universal satisfaction.

DR. BUFFETT: As Dr. Warner has spoken of hydrate of chloral, I would say that I use it quite freely, particularly so when the system is in an acid condition; when it is alkaline, am very careful in its use; would then prefer to use morphine. When chloral was first introduced, I saw a statement in a journal that when the drug came in contact with an alkali, chloroform was rapidly educed, and herein lay the danger where large doses were given. By local treatment much can be done to allay the sensibility of the teeth, but in those patients that are in a nervous, irritated condition other means should be resorted to.

Digitized by Google

Dr. Smith said, in regard to his experience in the use of the burring engine in excavating, that he believed that every time you remove the burr you produce a new shock to the patient, whereas, by continuing its action you spare the patient the repeated shock which would occur by touching it lightly and repeating the dose; and when he was operating on a tender tooth, he would tell the patient to hold on and bear it; that he would be done in a moment. He believed that it would give them less pain than to try to touch it more tenderly, and repeating it so often. He knew of no therapeutic agent that was reliable for obtunding sensitive dentine in the majority of cases that occur in our practice. He also remarked that there was a remedy that had gained some notoriety among members of the profession, especially those who believed in the homeopathic system of treating diseases; that was the use of mercurius vivus for periosteal difficulties. A number of dentists had given some attention to it, and physicians of the homœopathic school of medicine recommend it. I would be glad to know whether it accomplishes all that is claimed for it, or not.

Dr. Warner: In reply to Dr. Smith, I would say that for the past five or six years I have used mercurius vivus in cases of periostitis, and have, in very many instances, accomplished all that I desired. Dr. Rehwinkle was my preceptor in that branch of dental therapeutics, and I have no doubt he will be able to enlighten the Society upon that subject, as well as he has me.

Dr. Rehwinkle: I don't know, Mr. President, that I can throw much light upon the subject, except to say that it is one of the oldest remedies in the homœopathic practice. No doubt, if we understood and regarded the minutiæ necessary in administering homœopathic medicines, it would be found far more successful than it is. I don't rely upon that alone, however; because one can produce nearly the same effect with blue mass. If the remedy is used properly and with good judgment, I have no doubt it is a specific for periostitis. In treating toothache of a rheumatic or neuralgic character it may be beneficial; in all other affections of the teeth, however, it has seemed useless. Its proper place as a specific is in chronic irritation or inflammation of the periosteal membrane.

In regard to the use of the remedial agents spoken of by Drs. Warner and Buffet, we should, as with all others of like nature, proceed with great caution. We meet with some constitutions which will not tolerate them, while others kindly receive the benefits they impart. To those having excessively sensitive dentine and great susceptibility to pain, I believe either morphine (hypodermically), or

Digitized by Google

chloral (internally), to be a positive "God send." We have to contend with not only the pain, but also the condition of the mind. There are those apprehensions through fear, which will cause the nerves of some to be morbidly sensitive. I find by observation that this can be overcome to a great extent by one or the other of these remedies.

On motion of Dr. Taft, the subject was passed.

LANCING THE GUMS DURING FIRST DENTITION: IS THE OPERATION CALLED FOR; IF SO, HOW SHOULD IT BE PERFORMED?

DR. WATT, in opening the discussion on this subject, said: First dentition is a physiological process, and in that view ought to be left to nature, without interference, as some would claim. And there seems to be some foundation for this opinion. That is the theory of some who call themselves physicians, and they denounce any interference with the process in the child. But the argument proves too much. This would apply to parturition just as much as to dentition, and yet, owing to the infirmities of the race, inherited from the first gardeners, we have pathology mixed in with physiology in parturition, and so we have in dentition. I think that every physician, with half as much experience as I have had, will recognize the fact that he has seen trouble from first dentition; that where the child's teeth were coming slowly, its general health was bad, the irritation and pressure producing a reflex influence, often resulting in convulsions, in stupor, in coma. I have frequently seen children, from this cause, in profound coma, with their head and eyes turned back, and have relieved them by a gentle incision, which would, in such cases, be absolutely painless. I have seen children in this critical condition thus relieved, so that in thirty minutes afterwards they would be wide awake and playing.

Dr. Watt then cited several cases in his own experience illustrating the correctness of his statements on this subject.

He said he was in favor of lancing the gums when the operation was demanded; over the molars he would make a crucial incision.

DR. CLAYTON: I would ask Dr. Watt whether he would consider persistent diarrhœa sufficient cause for lancing the gums?

DR. WATT: Yes, sir; I would. The diarrhœa might result from some other cause, but the irritability of the nerves, resulting from the influence of difficult dentition, would make the diarrhœa more diffi-

Digitized by Google

cult to manage, and it is better for the little sufferer to have but one disease, rather than two. Generally you will find the diarrhœa abated by doing so; at any rate, it would be much more likely to stop. But I would not conclude, at once, that the diarrhœa was caused by the teeth. Don't conclude anything without examining. I take it that the great mistake in ours, as well as the medical profession, is doing things by guess work. You have no right to treat anybody by guess work. If you don't know what is the matter with them, find out.

Dr. J. Taft: We find oftentimes a prejudice existing in the minds of many persons against this operation. Parents will frequently object, and very stubbornly, to lancing or cutting the gums in difficult dentition, because their physician has suggested to them that it is dangerous, and will never amount to anything in the way of relief.

I think Dr. Watt has said about all in reference to the treatment that is necessary to say. There are, of course, a great many cases where it is not necessary at all, but in cases where there appears to be difficult dentition this is a very common remedy or mode of treatment, and will in almost every case of difficult dentition, of an ordinary kind, give relief. There are two or three objections on the part of some persons to this operation that may be noticed. One is, that there is danger of hemorrhage. Well, now, there is no more danger of hemorrhage than there would be in cutting any other tissue. Again, it is sometimes said it will do no good, and therefore it is not worth while to do it. Physicians often say it is all bosh and nonsense. Then again some sympathetic mothers say it will hurt the dear child. They will let their children suffer all the agonies of difficult dentition, convulsions, and possibly death, but don't like to see the little child hurt by having its gums lanced. It seems to me there is common sense in this matter that ought to recommend it to everybody with an ordinary amount of intelligence. The dentist has much to do in regard to this matter. He has not only to learn the things Dr. Watt has mentioned, and be able to diagnose, discover and understand the difficulties in the cases brought to him, but he has also to disabuse the minds of those who are his patients, and to disabuse the minds of those physicians who oppose it, if he can.

Dr. C. Palmer: Dr. Watt, will you please give your view of what the condition is when the lancing is called for?

Dr. Watt: Well, there might be a good deal of difference in persons' views as to that. It is a common expression that doctors disagree; but if I find that during first dentition a child is restless and

Digitized by Google

does not sleep well, is fretful, or has persistent diarrhœa, or irritability of temper—if the child is irritable, at any rate—and I have anything to do with it, I examine the condition of its mouth, and if I find there is a fullness and swelling over the teeth, so that the membrane is drawn tense over the teeth which are coming through, then I conclude that there is an indication for lancing the gums, even if there is no extreme condition, as convulsions, or coma, as before described. I consider the circumstances I have named sufficient to justify the operation. I don't like to wait until a child gets into fits and then cure the fits. I consider that bad practice. Some one said yesterday that six babes were taken to the physician in difficult dentition to where there was one taken to the dentist, and that where there was one taken to the physician, there were six sent to their graves, or something to that amount. It may be because I am a physician too, but almost regardless of who their family physician is, parents bring their babes to me, and I suppose to other dentists, too, in Xenia. They frequently have me call on their babes in cases of difficult dentition.

Dr. J. H. Warner: I would like to ask Dr. Watt if he has ever known of instances where these spasms began almost instantaneously, or whether there was a gradual increase of the nervous disturbance. I speak of this simply because I know of a case in which it has been a doubt in my mind whether it arose from retarded or difficult dentition, or whether the death of the child was caused by some other disease. The child was taken with spasms almost instantly, followed by persistent diarrhœa, until finally it took on a bloody condition, and the child died within a week or ten days. The child was about twenty months old.

Dr. Watt did not call to mind any such cases.

Dr. Rehwinkle: Mr. President, the reason we have not settled down upon a systematic practice in this matter, and why there is so much doubt about it, as to whether it is beneficial, or the contrary, it seems to me, depends entirely upon this fact: that many physicians do not recognize but ignore the good effect that may be produced by lancing the gums, in difficult dentition. They are entirely too careless in reference to this matter. How rarely is it that dentists are consulted in such cases. During a practice of twenty-five years, I can call to mind very few instances in which I have been so consulted, though as a physician I have been frequently asked for advice. Now, I have lanced children's gums from the time I commenced practice, and have done it almost invariably when there was any occasion for it. I have followed the practice laid down by Dr. Watt,

Digitized by Google

taking such cases in time, and not waiting until "fits had set in." I have never yet seen a case which could be called hemorrhage, resulting from it. There will be a little blood letting, which may be more advantageous than otherwise.

There is one thing we must not lose sight of. In localities where there is miasm, and where the constitution has been enfeebled through difficult dentition, diarrhœa and other causes, such children are liable to succumb to the influence of malaria during the above named period, and when the stage of fever comes on they generally have convulsions, not from the teeth, but from the effect of the fever. As soon as the fever paroxysm subsides and passes into its third stage, that of perspiration, the spasms gradually cease, and perhaps will not return until the next attack of fever. In cases of this kind, the gums may have been lanced and spasms may set in subsequently to the operation, and the case pronounced an unsuccessful one. Now, here is the difficulty of discriminating and charging each to its own proper account; as to whether the operation was beneficial or not; whether the spasms were in consequence of the eruption of the teeth, or whether they were produced by some other unknown complication.

I have seen such cases as Dr. Watt described, where the child was in an alarming condition, but relieved in a few hours by simply lancing the gums. I wish to emphasize what he said about the manner of performing the operation. Some physicians, instead of cutting through the gum to the tooth, simply scratch the mucous membrane. Now, whenever the operation is made it should be thoroughly done. The lancet should not stop until the crown of the new tooth has been reached. I cannot recall any instance in all my practice where harm has resulted to the child which could justly be placed to the account of the operation of lancing the gums.

On motion of Dr. Taft, the subject was passed.

The Society then adjourned until 1:30 P. M.

AFTERNOON SESSION.

Dr. Palmer exhibited models and addressed the Society in reference to the plans he had adopted in building up teeth in the mouths of the patients from which the casts he exhibited were taken. His lecture was also illustrated by a number of drawings on canvas, to which frequent reference was made. In the absence of the models and drawings it would be impossible to give a full and intelligible re-

Digitized by Google

port of his remarks. We give the following, condensed from what was said in the course of the lecture:

The Doctor spoke to the Society in regard to the treatment he had adopted in three cases illustrated by the models and drawings. The first case was one he termed the restoration and prolongation of the teeth where they were peculiarly shortened by attrition, which had gone so far that the pulp began to be injured. He showed by an illustration how the teeth were cut away—they were the superior incisors and were worn away on their lingual surfaces. A portion of the drawing also represented the condition of the inferior incisors, which remained intact, or nearly so. He remarked that when he first began to make the operations, he beveled the edge and endeavored to carry the gold over it, so as to preserve the plate for appearance, but experience had taught him that it was better not to take that risk. He would not advise the plan of bevelling off the edge as he at first did, but would cut it square across, so the gold would come up on a square base. It was not best to file little notches along the edge, expecting it will help hold the gold, or to bevel it outward to carry the gold up, because if this is done no perfect line of demarcation can be made. He thought it was very important that this be observed, though it was different from the method first taught in this kind of work. The patient on whom the work was performed in this first case referred to was seventy years of age.

The second case presented was that of a central left superior incisor. He showed the manner in which the gold was attached to the tooth in this case by cutting grooves and the use of screws in conjunction with the grooves. If the tooth was large, do the work without the use of the screws; if small, he would use the screws.

In reply to a question by Dr. Taft, Dr. Palmer said he generally used two screws in such cases. He remarked that the grooves ought to be cut in straight and square, and not varying in one direction or the other.

The next case to which he referred was an operation performed in July last; the patient, a lady aged sixty-eight. The case, he said, was complicated. When it was presented, each of the four inferior incisors were giving trouble, being in a very bad condition from undue wearing and exposure, and one of them was in a tumified condition, having an abscess at the point of the root when he began to treat it. When that was put in a condition so he could proceed, he first brought up the right inferior cuspid, which he did at one sitting. His usual practice, and his judgment was that it was better in the commencement of a case of this kind to bring up a tooth on each

Digitized by Google

side, than for the patient to leave with a tooth on one side built up, allowing all the force to come upon that.

Dr. Palmer advised making but one or two operations a day in cases like these. It was not best to hurry, but allow the patient time to rest. In the last case screws were used in the inferior incisors, but in the upper ones the grooves were deep.

Dr. Rehwinkle: I want to ask whether you succeeded in tightening up those teeth again?

Dr. Palmer: I certainly did. They became quite firm.

Dr. Palmer also spoke at some length in reference to the manufacture of gold foil, and exhibited to the society his manner of rolling gold foil, using a napkin for the purpose.

He remarked that each one had his favorite maker of gold foil, and had made up his mind that he knew as much about it as the next one. What he had to say, however, on this subject, he had gained from his experience in working gold. He had been accustomed to working gold, in all its forms, refining and preparing it in different ways for artistic purposes, before he became a dentist. And when he saw what the manufacturers were doing with the foil, he saw they were doing that which, if they understood what dentists wanted, they would not do. The cohesive quality of the gold gave them trouble in working it, and they tried to get rid of this. They were all ambitious to have their foil look nice and salable, but everything that was done to it after it was beaten and annealed, was a damage to it. The quality of cohesion in gold is brought out by heat. When left in a proper condition there is a certain elasticity about it, but this elasticity is destroyed by the process of pressing which it undergoes by the manufacturers.

His first efforts were to labor with Johnson Bros., manufacturers of gold foil, to get them to furnish him with the gold foil annealed and prepared without pressing at all. It is the pounding, beating and pressing that hardens the gold, and just so much as that is done its quality is impaired for the purpose for which dentists use it. The man who now prepares the foil for him is a practical worker, and he himself having been a practical worker of gold, knew how to talk to him and direct him as to what was needed by the dentists. This manufacturer had succeeded in producing an excellent article which gave him great satisfaction. He recommended the gold foil manufactured by this gentleman—E. Kiersing, Brooklyn, N. Y.,—to dentists as superior to any; as pure as art could make it.

Digitized by Google

In answer to a question as to what number he used, Dr. Palmer replied that he used No. 4.

At the conclusion of his remarks, Dr. Palmer exhibited to the Society his manner of rolling gold foil on a napkin, and stated that there was nothing so good for this purpose as a napkin; that it could be done in this way more quickly and better than in any other.

Dr. Taft exhibited some specimens of gold foil he had received from Mr. White, which presented some curious phenomena, produced by the different ways in which the gold was manipulated. The first specimen he exhibited was beaten to the thickness of the three thousandth part of an inch, through which the rays of light passed very freely. This specimen, he remarked, when held to the light cut off all the rays but the green.

The next specimen, which also admitted the rays through it, presented a granular appearance.

The next piece was more perfect in structure, though only one twenty thousandths of an inch in thickness. It admitted the light to some extent, but presented a very different appearance from the others.

He had used some of the gold foil referred to by Dr. Palmer, and believed it worthy of the commendation he gave it.

Dr. Horton believed that sometimes dentists were blamed with doing poor work, when in fact the failure was in consequence of the poor quality of the gold foil they sometimes got. He had occasionally found some among lots he had purchased which he had to return because of its friable condition. He thought in some cases this poor quality of foil might be used by the dentist without his detecting it at the time, and he be blamed for the poor results that would follow its use.

He felt that they had all received some valuable information in the suggestions presented by Dr. Palmer.

EVENING SESSION.

THE NEXT SUBJECT "MECHANICAL DENTISTRY" WAS NOW TAKEN UP. DR. J. R. CLAYTON READ THE FOLLOWING PAPER.

By the term mechanical dentistry, is usually understood that branch of our art that pertains to the manufacture of artificial teeth, upon any of the various materials used as a base.

That this has been undeservedly neglected, no one who has given

Digitized by Google

it a moment's thought will deny. Very many of our best operators in that department which treats of the natural teeth, their diseases and treatment, have so much neglected the plate work as to ignore entirely the demands upon the profession for skillful and artistic execution.

They take the impression of the mouth, adjust the trial plates, select the teeth, maybe, and then send it to "my man" in the laboratory or to the shop of some one who constructs plates for half a dozen other dentists. This is not as it should be. Every face has an individuality which must be carefully studied.

To reach the best results in this branch of our art, the face must be studied in all its types and in its perfection, the natural teeth all in place, for the edentulous mouth is in a certain sense in a pathological condition, and to restore any organ to its physiological condition, we must first know what that condition is. Give the naturalist a tooth, and he will make you the face and frame. Having the face and frame, should not the dentist supply the teeth? We should be able to say upon sight just what kind of teeth our patient had, as to size, shape and prominence, whether much of the teeth or many of the teeth were shown.

No man can construct a set of teeth as they should be without carefully studying the face form, osseous structure, color of eyes, hair and complexion. In fact, I see no grander field for earnest labor than here; no greater promise of grand results than in the study of the human face, classifying and systematizing the various types of face, and the teeth belonging to each type.

Some dentists excuse this slip-shod manner of doing things by saying that they do not like this kind of work. This will not do.

The physician, perhaps, finds many things in his practice which are not pleasant, and yet society and law holds him to a strict accountability for the proper discharge of all of his duties.

One bar to success in restoring the lost expression of the face is the use of block teeth as manufactured now. There will be a stiffness that we cannot avoid, do the best we can. And even to get all the advantages possible from block teeth, would compel us to keep a much larger stock of teeth on hand than many country dentists are able to do.

Those living in the cities where depots are established have much the advantage, and yet I have seen men select teeth with reference to fitting the cast rather than the face. Could hardly tell whether he wanted teeth for male or female, dark or light complexion, round face or hatchet.

Digitized by Google

Allow me to say that much greater skill is required to make a set of teeth than is required to fill one. To make a set of teeth requires a degree of skill but little inferior to that of the painter of the portrait. Did celluloid keep its color in the mouth, and plain teeth were used, a very great advance might be gained in restoring the facial expression.

The writer sometimes uses single gum teeth for the six anterior, in fitting an upper set of teeth to a set of natural teeth inferior, and a very nice piece of work can be made, too, the joints being easier fitted than a block joint.

As to material used, but little can be said that is original. Continuous gum is, perhaps, the finest work made, but is objectionable on account of price. Gold plate, with rubber attachment, makes a very fine piece of work, but is somewhat expensive. It has one merit of being easy to mend compared with continuous gum. Between rubber and celluloid there is not much choice, each possessing advantages that the other does not.

DISCUSSION—MECHANICAL DENTISTRY.

Dr. Whinnery, in opening the discussion upon the subject, said that it seemed to him that Dr. Clayton had said nearly everything that could be said on the subject, and that it need not be much enlarged upon. The fact is, as he says, that no one is capable of putting in a set of artificial teeth without being an artist; without studying the complexion, the color of the hair, the eyes, etc., indeed the whole person. To give the proper expression there must be harmony. As Dr. Allen used to say, it must be a set of teeth so in harmony with the whole system that nature will recognize and acknowledge it. Otherwise, when it is out of harmony, it appears not only to others as a foreign body, but also, in a great measure, to the individual that is wearing it.

There are many dentists who set teeth around the arch instead of setting them up against the arch, and having them occupy the position formerly filled by the natural teeth, thus presenting a very disagreeable appearance. He frequently passed people on the street into whose mouths he would be willing to put a new set of teeth gratis, rather than look at them as they were. It is a great disadvantage to the person, and gives an unfavorable first impression, very often. Some dentists, in going to a dental depot to pick out teeth, will pick for those that are handsome, and say, "These are the kind of teeth we want you to send us, always." They put in beautiful teeth for every person. The delicate young lady of eighteen or

Digitized by Google

twenty years of age, will get a delicate, nice set of teeth, probably adapted to her case; and the man who has naturally got long, tusky teeth, receives the same kind. And with his little delicate set of teeth his appearance will be such as to make you laugh.

DR. BUTLER: The subject of mechanical dentistry used to excite considerable interest, not only in this Society, but in others throughout the State; but it seems to have been almost ignored, for some reason. Notwithstanding all that, so long as we practice dentistry, and wish to be called dentists, there will be demands upon us for artificial dentures, and we should, in justice to those who need our services, not ignore it simply under the plea that it has been turned over to, or seized upon by a certain set of rubber cormorants and tramps; I don't know what else to call them. Perhaps we are as much to blame for that, or more so, than anybody else. For one, I used to have some little ambition and admiration for artificial dentures; that is, the making of them, but I must say that I have no special ambition in that direction at the present time, any further than the production of good things.

With this as a little preliminary, I desire to say something with reference to putting in of artificial substitutes; the advantage of putting them in almost immediately, or very soon after the extraction of the teeth or roots. It is well known that the muscles of the face, as well as other parts of the body, must have some support, and they will go down if the teeth are removed; and in these cases where they are worn down by gradual use and shortening of the teeth, the muscles become contracted correspondingly; and after the teeth have been removed sometimes for six months or a year, the very best and most skillful men in that department of the production of artificial dentures may be called upon, yet, in many cases, it will be absolutely impossible to restore the features to anything like the original expression. Therefore, it seems to me that as soon as possible after the teeth have been removed a substitute should be put in for the purpose of keeping the features in shape, and also that the breaking down by absorption of the hard tissues shall not go on to the extent that it would.

There is another feature: Some say that rubber, or celluloid, is very easily manipulated, and CHEAP, and for that reason should be used for temporary pieces. Those, however, that have observed the condition in the apparent absorption that takes place in the hard tissues, that is, where the rubber plates have been worn, in contradistinction to metal, are aware that the absorption will be much greater and the soft tissue not in as good condition as where metal

Digitized by Google

had been used. Now, if we must have a cheap substance on which to mount temporary teeth, cheaper than silver or gold, we have it very readily in the cast bases, or the metals used that we call cast metal. So that if we desire to do ourselves credit, and the people justice that come to us for our services, we ought not, notwithstanding it is more pleasant to confine ourselves to one department; we ought not to so far forget the matter as not to give it any attention, and *recommend* at *least* a good thing. It is well known that this cast metal can be made sufficiently thin, and yet strong enough for temporary purposes, at least. It is said by those who have worn continuous gum work that is mounted, notwithstanding it is three or four times as heavy as the teeth made upon gold, it is not perceptible in the mouth, that is, as an upper denture; and we can see how that may be; for, if the piece is well adjusted, the additional weight will not amount to anything. Talk about a piece being perfectly fitted; why, nobody could wear it if it was *perfectly* fitted. There has been much damage done in attempting to hold badly constructed pieces in the mouth, with a flexible edge, and retaining disks. The constant pressure upon the part where it is so closely fitted is destructive, not only to the soft tissue, but to the hard tissue of the mouth. If they will wear such plates long enough, they will fit themselves, or the parts become fitted to them. This is a barbarous way of doing things.

I desire mostly to speak with reference to the use of something that will give us what we must have to carry artificial teeth as a base or plate. If we must have a cheap thing, then let us have something that is not so deleterious upon the tissues as these non-conducting substances. Now, not because I am opposed to the hard rubber claims set up by Mr. Bacon, or the patent, the celluloid, or any other material, but upon general principles, having tried these things and having satisfied my own mind that they are not what we want nor what we should recommend conscientiously. We all know very well, no matter whether we have made much or little on the hard rubber base, that it is a temporary thing. No vegetable substance will begin to compare with metal; and no matter how nicely it is mounted, no matter how nicely it is vulcanized, when it is made so as to receive a decent polish, it is as hard as it should be, but even then it does not meet with entire satisfaction. In a few years it becomes brittle. "Oh, well," some will say, "The cost is so little; they have got their money out of it," and all that, but we should not recommend anything knowing that it is a perishable substance. If it cannot be, in the nature of things, permanent, and that is what they all desire, no matter how little they pay for it.

Digitized by Google

The teeth should be in harmony with the features, as has been said, but we see this principle very often violated. You will see a person of seventy-five years of age, perhaps, with teeth suited to a person of twenty-five years, or the reverse, but you will be more likely to see the teeth that belong to a person of twenty-five years of age, or even twenty, in a person of sixty-five or seventy; and how ridiculous it makes them appear. I am sure I don't like to have such a thing as that set down to my account. If we have been making mistakes of that kind, I think we should cease doing so.

Dr. Keely: Mr. President, it seems to me that the necessity for a cheaper article than silver does not exist, when that plate does not cost more than a dollar or a dollar and a half. Silver, in my experience of over thirty years making plates, is a good thing and lasts well. A lady came into my office within the last six months with a piece she had worn for the last twenty-four years. Silver is cheap enough, if we want anything cheap, and if we want anything dearer, gold is good enough. I believe that in six weeks time a real energetic man could learn to put up rubber, but it is terrible looking stuff, though, of course, it can be put up much cheaper. I was talking not long since with a man about the price of dental work. He said that people did not know the difference between these peddlers that go around filling teeth, and artists that charge twenty or twenty-five dollars. I told him it made no difference whether they knew it or not, the man knows it, himself, and when he does work for nothing he will not bring out good results. He must feel degraded if he did do the work for such prices as it is claimed. No man will put forth much effort on a set of teeth for ten dollars.

Dr. Smith spoke of a very handsome piece of work made by Dr. Reid, and desired the Doctor to make some remarks in regard to it.

Dr. Reid responded, giving an account of the manner in which he had performed the work. In reference to the different kinds of plate used, he remarked that he thought it was, in dentistry, as in anything else; that we should be governed just as we were in buying clothing, or any other article; that it was more economical in the end to buy that which was best. He believed that gold plates were more economical than others, and the best in the end. He didn't know what others thought of the duration of rubber; he didn't believe that it would last more than from five to seven years.

Dr. Butler said that that was about as long as it would last.

Dr. Reid said that he thought, taking all things into consideration, that a good piece of gold work, or continuous gum, was a

Digitized by Google

great deal cheaper. He believed that as soon as people could be brought to understand that it was better for them than those cheap bases, and cheaper for them in the end, they would prefer them; he believed that this would be the case, both in the country and in the city. He thought that dentists very often neglected to take as much time as they should, in doing their work. Many think that the pay they receive will not justify them for taking time; that they can not afford to take time. Whenever a man works in this way, there is not one time in ten that he will get out the best work. He did not think that he ever originated anything better than what he had seen. He thought that he had received much valuable instruction from the Ohio State Dental Association, and had got many good ideas at its meetings, and by his association with dentists in other societies.

In regard to the matter of remuneration, he again remarked that what we did should be well done. He never took time to do a piece of work well, but that he felt that he was paid for it; if he did not get his pay directly, he thought he made money in the end. It was a great satisfaction for him to have work just to suit himself; he took a great deal of pleasure in it. He advised his brother dentists to do the best work they could, believing that they would ultimately receive full compensation for it, when it became known that their efforts brought forth such good results. He thought the great trouble among many dentists was that they were not particular enough in their work. It was his opinion that one thing that had made Dr. Palmer so eminent in his profession was this matter of doing work well; working until he got the very result that he desired.

Dr. Rehwinkel thought, in regard to deterioration in reference to mechanical dentistry, that they sometimes forgot to place the blame where a good part of it belonged. He had seldom found any difficulty in pleasing the patients themselves, but added to this,—one must please all their friends, individually and collectively. He never knew a woman who didn't know all about dentistry; when it came to artificial teeth, they would be prepared to criticise; considering themselves the most competent judges, and able to tell within a hair's breadth, whether the teeth were too long or too short, too broad or too narrow; whether they set out too far, or were in too much. They will freely tell the patient all these things, who will come back again and again, telling a new story each time; first making one objection and then another. These difficulties must be met and overcome, and in the end it becomes very annoying. The dentist, under such circumstances, may feel very much like letting mechanical dentistry "go to the dogs," as far as he is concerned.

Digitized by Google

It oftentimes takes a good deal of argument to overcome their preferences for rubber. Gold plate is doubtless much better than rubber, but one has considerable difficulty in convincing them of it. The fact of Mrs. so and so having rubber, and liking it, being in their estimation all sufficient proof of its excellence; not knowing how to judge of their own cases or special requirements.

He gave an account of two recent cases, one in which rubber had been worn, and the other celluloid, in each of which there was considerable irritation. He had obviated this difficulty by a combination of rubber and gold plate, so that the gold, instead of the rubber, came in contact with the irritated portion of the mouth. The question which he thought concerned them was how to elevate mechanical dentistry and make it respectable again. The ordinary method of making plates with celluloid and rubber, as all were aware, had produced a new era in dentistry, and it seemed impossible to push that work out of the market, so strong a hold had it seemed to have taken upon the public and the profession, and he did not see how that could be altered, at present.

Dr. Butler thought the trouble in regard to rubber was going to overcome itself to a very great extent; that there was a beginning, already, in that direction. This thing must have its run, like a great many other extremes, but it was a failure. It had been used a sufficient length of time to prove this. There was not a man in the room who had had anything to do with dentistry but what knew it to be an absolute fact that it failed, he didn't care how well they made the work. Knowing that fact, he didn't see how they could go on repeating and repeating that kind of work, putting in the same kind of stuff. These facts were beginning to be understood by the people, and they are complaining of its failures; and, notwithstanding they must have new pieces made cheaply, they begin to think that may be it is not so cheap, after all. He desired that none of them should do anything, from that day forward, that should help this thing on. If improvements in their production were made, we must necessarily have a hand in it, and as the complaints were coming up from the people because of this want of security in the rubber work, we, of course, would have to produce for the people what they demanded. Just as soon as they want a better thing it is time for us to prepare a better thing for them.

Dr. Smith thought that those who did the least in mechanical dentistry discuss the matter the most. Dr. Reid, in his remarks, had asked how long rubber would last. That suggested another question to his mind: How long a set of teeth should be worn. He thought

Digitized by Google

those who manufacture artificial teeth give a wrong impression as to the length of time the teeth will last, or should be worn. Many have their teeth extracted quite early in life; they soon have a permanent set of artificial teeth made with the guaranty, or expectation, at least, that they will last them for life, especially if it is a first-class artificial denture. He believed that the average duration that a set of teeth should be worn, especially for a young person, should not be more than about eight years; sometimes not more than five years from the time they were first placed in the mouth; and if it is an inferior piece of work, the result is there is a great strain from want of adaptation, and the teeth go down, and the dentists are blamed for doing a poor piece of work, when it is not their fault. While he didn't like rubber, and didn't think it the best thing, yet, when he looked at the short period a set of teeth should be used, he thought the question of cost should be taken into consideration. If a patient pays two or three hundred dollars for a set of teeth, certainly they ought to last much longer. Then the question comes up whether it is better to insert those expensive sets of teeth, except to persons of larger means. All these things must be taken into consideration. Those of large means are more likely to have their natural teeth well taken care of. It costs a great deal to save the natural teeth, at the present day.

Dr. Warner said he endorsed every word that Dr. Smith had said on the subject of artificial dentures. He knew that Dr. Smith did very little artificial work, and yet he had arrived at the same conclusions, after considerable experience and observation. Any person who made artificial teeth and guaranteed them to last fifteen or twenty years, was a bigger fool than the person who bought them. He didn't think any man or woman could wear a set of teeth twenty years with satisfaction to himself or herself, he didn't care what the base of the teeth might be, whether of continuous gum, or gold plate, or any other substance. In his judgment, five years was as long as they ought to be worn, as the changes in the mouth, from absorption, were such that in a few years the teeth were not adapted to the mouth. If it became necessary that cheap work be done, and the dentist felt that he could not afford the work for a low price, it was better to recommend some young dentist, if there were one who was worthy, than to let them go to these gutter snipes and obtain slop-shop work, cheap in price and poor in quality.

Dr. Herriott said he would not denounce rubber, or celluloid, or any other substance that was used for plates by the profession; that they all had their places, and ought to be kept each in its place.

Digitized by Google

The great mass use rubber, there was no use of denying that; he knew it to be a fact.

The Ohio Dental Society afforded its members no small amount of instruction on the various subjects brought before it; he was proud to be a member of the Association; he believed the discussions of the Society, as published, were superior to those of any other Dental Society of which he had any knowledge; it was looked up to by others for instruction. The amount of information gained by the members repaid them largely for their expense and time in attending its sessions. While this was true, he thought the subject of mechanical dentistry had been greatly ignored by the Society. He acknowledged that he himself was to blame in part for this, as he had been a member ever since its organization. In giving attention to other matters, they had not paid that attention to this subject they should have done; he thought it should receive more study and investigation in the future.

The members of this Association were the conservators of the public, so far as the mouth was concerned; and as the great mass of the people wear artificial teeth, their duty was not confined to the few. The number that wear artificial dentures was a matter of perfect surprise, unless a person had taken the trouble to look it up.

The length of time that a set of teeth should be worn would be varied by circumstances. Where persons used one side of the mouth more than the other, in chewing, in wearing artificial dentures, they would impair them much sooner. He thought it the duty of dentists to aid the people in this respect, and to advise a change of teeth when it became necessary, with as much freedom as they would advise them with regard to taking care of their natural teeth. He thought that dentists should not allow mechanical dentistry to go into the hands of charlatans, and trusted that the profession in Ohio would look to this matter, as it belongs to the dentist to construct artificial dentures just as much as the other work required in dental operations.

In reference to the compensation for dental work, he said that for fifteen years before he left the State he charged such prices as he felt the operations were worth. The matter of charging so much for an upper set of teeth, and so much for a lower set, was not the proper method; they might as well charge a uniform price for plugging teeth, and receive no more for filling a large cavity than a very small one. The time and trouble attending an operation should be taken into consideration in making the charge for the work. Where people were made to understand and appreciate the work performed by the

Digitized by Google

dentist, there would be no difficulty about their paying for it; all they need is education.

DR. KEELY: I did not intend to say anything on this subject, but Dr. Warner made a remark that made me think I ought to say something. I understood him to say that an artificial set of teeth were not calculated to last many years. Did I understand you correctly?

DR. WARNER: I said that no set of artificial teeth ought to be worn more than five years, because at the end of that time their adaptation to the mouth became so imperfect as to render the denture inapplicable to that case.

DR. KEELY: That convinces me that Dr. Warner was not born very long before the late war that so terribly demoralized our country and every profession in the country; perhaps I should make no exceptions. Now, in the good old honest days, when I was a young man, we never thought of putting in a permanent set of teeth on gold plate short of a year after extracting the teeth and roots. If Dr. Warner will come down to Oxford, I will show him an old lady, wearing, with perfect satisfaction, a set of teeth I put in her mouth over twenty years ago. A short time since I saw her, and she said they were doing well yet, and remarked that she could eat nails, if she had a mind to, with them. Here is my friend, Dr. Smith, when he was with me, eighteen years ago, he made the first set where he took the entire responsibility, and did the whole work; those teeth have been in eighteen years; I saw the person wearing them last summer, and was told that they were doing perfectly well. The plates in the mouth look as though they fitted just as well as the day they were put there.

DR. KEELY also cited two or three other cases where teeth that he had put in eighteen or twenty years ago were doing good service. He remarked that he left the mouth until there was no further shrinkage of the muscles, before he would put in the permanent set. He had understood Dr. Butler to say that the sooner the artificial teeth were put in after extracting the teeth the better. He would take issue with Dr. Butler, most positively, on that point, judging from the experience that he had had.

In answer to an inquiry as to how long after extracting the teeth before he would insert artificial teeth, he replied that it would be owing to circumstances; varying from three months to a year.

DR. WHINNERY thought a good deal that had been said on this subject was irrelevant, while some was to the point. In regard to the length of time that teeth should be worn, he said the fact was people would not change the teeth every five years; very few would

Digitized by Google

do it; most people will wear them as long as they can comfortably. In many cases an examination would show a want of fit and a certain amount of discomfort. If, however, the President would pay him a visit, he would promise that he would show him cases where teeth that he had inserted had been worn twenty-eight years; not one or two isolated cases, but quite a number of them. He thought that rubber wore too long; it had worn for him from ten to fifteen years; he did not know how much longer it would wear; but, as had been said, teeth inserted on rubber should be changed oftener than is the case in practice.

The point Dr. Butler made in regard to fashions was true. In many cases persons will get rubber because others have done so. Some will tell you that such and such a person had worn gold or silver plates and had exchanged them for rubber, and it suited much better. But if you try to have them change the plates every five years, that would not become fashionable, because it would cost too much, and touch their pockets. He did not know how long gold plates would last, but thought, perhaps, if the work were well done, they would last probably fifty years.

Dr. Clayton spoke at some length in reference to the use of the air chamber, entering his protest against it.

Dr. Von Bonhurst said his experience in mechanical dentistry had led him to believe that it did not make so much difference as to the kind of material used for plates, provided they were properly made. The first plate he made, in Lancaster, thirteen years ago, was an upper and lower set for an old lady who had not had a tooth in her mouth for several years. He had lately seen this lady, who assured him that those teeth were still doing good service; and these teeth were on this "infernal rubber," as gentlemen call it. He was not the champion of Josiah Bacon, and was not in love with rubber above gold or platina, or anything of the kind, but he simply referred to this to show that when the material is properly manipulated, under favorable circumstances, it will last just as long as anything else you can put in the mouth.

He regarded the air chamber as a useless affair.

Adjourned until 9 A. M.

MORNING SESSION.

Friday, Dec. 7, 1877.

After some miscellaneous business, the discussion on the topic of the preceding evening was resumed.

Dr. J. Taft said that there were several points to be taken into

Digitized by Google

consideration in reference to the length of time artificial teeth can be worn. On the one hand, instances had been referred to where persons had worn artificial teeth twenty-five or thirty years, while others claimed they should not be worn more than four or five years. The condition of the parts will depend upon the condition of the mouth when the teeth are put there, and the length of time that elapses, not only between the time of the extraction of the natural teeth, or roots,, and the time the permanent artificial teeth are put in, but also between the time when the temporary and permanent sets are put in.

It will also depend upon the base, or plates. If they rest so as to make an undue pressure upon some parts, they will not wear so long as if the pressure was equal on all parts. Where there is the greatest pressure there is likely to be the greatest absorption. The character of the material for the base has also something to do with it. He knew from close observation for many years that a plate that does not convey the thermal changes to the parts beneath it, will cause more absorption than one of a different kind, that will convey the thermal changes. The greatest objection against rubber—and it rests as well against celluloid—is because of the absorption beneath the rubber, which takes place to a far greater extent than beneath gold plate.

He did not think they were justifiable in saying that teeth should be removed every four or five years. It was not thought so twenty-five or thirty years ago. Artificial teeth inserted then were being worn comfortably to-day. He thought this was often rendered necessary because of the imperfect manner in which they were mounted, or the imperfect and deleterious material used for the bearing of the artificial teeth.

Three things, he said, should be observed in setting artificial teeth. First, to restore the original appearance of the teeth as they were in the mouth; second, to so set them as to best subserve the process of thorough mastication, setting them so there shall not be any undue pressure or leverage upon any parts; third, so as to assist the person wearing them in the proper enunciation of speech.

Dentists, he believed, might do much to educate the people up to a higher appreciation of the right kind of work, when they would be willing to render a full compensation for good work. Perhaps one of the best plans to bring this desirable end about, would be for some in the profession to make a specialty of this branch of their work, giving particular attention to it, making a study of it, and pursuing it until the hightest point of excellence would be attained.

Digitized by Google

EVENING SESSION.

CASES REPORTED BY H. L. AMBLER, D. D. S.

Mr. ———, æt. 45, sanguino-bilious temperament, presented himself with paralysis of the right side of the face; said he first discovered it one morning immediately after rising, when he tried to whistle, but could not. He went to a physician, who gave him Belladonna and various other remedies for one week, but without any good results. The patient localizes the pain in and around the third superior molar of the affected side; and by touching the gum and cheek near the tooth, with the finger, it produces a kind of spasm or twitching of the muscles of that side of the face and neck. This phase can be accounted for, on the ground that the paralysis of the motor nerves was not complete. We extracted the above mentioned tooth, which was diagnosed as the cause of the trouble; then no spasm could be produced by placing the finger in the above named position. No medicine was administered, the patient became better, and at the end of one week was entirely well.

The tooth had a large cavity opening into the pulp-chamber, with the pulp dead. In this case, loss of motion was due to paralysis of the Temporo-facial and Cervico-facial nerves, branches of the Facial, (portio-dura or hard part of the seventh pair), this being the motor nerve of the face. Loss of sensation was due to paralysis of branches of Ophthalmic, Superior Maxillary, and Inferior Maxillary nerves. Vision of the right eye was also somewhat impaired.

Case 2d.—Mr. ———, æt. 60, nervous temperament, has the superior and inferior incisors only. This is a case of what might be called hereditary absorption of the gums and alveoli around the teeth, until the attachment is very slight. We have had an opportunity to observe the same condition in younger members of the same family, who from year to year are losing their teeth from the above cause. We extracted all the teeth, but for weeks, at different times, he would put his finger into his mouth, thinking to touch the teeth, as it seemed that they were still there, and at times, different ones of them ached quite severely. It has often been said by those who have had an arm or leg amputated, that in the winter, the portion which was gone was cold, or that it ached before a storm came, etc. This is the first case we have seen where similar things could be said of the teeth. Possibly the above phenomenon may be accounted for in this way: the brain maintains a nervo-vital record and governmental sympathy with each part of the lower organism, and such sympathy cannot be withdrawn violently or hastily.

Digitized by Google

Case 3d.—Mr. S—— says, about nine years ago, when he was helping move a loaded wagon, something fell off and struck his left superior central incisor, breaking off the corner; it has been aching for three or four days, but never troubled him before, and now the pain has subsided, leaving a soreness about the tooth. During the day, before we saw him, there was a discarge of pus from the left nostril and the mouth. Upon a careful examination, there could not be found on the gums or palatine surface of the mouth any point where pus had been evacuated; but it evidently had burrowed its way into the inferior meatus of the nose, some portion of it passing beyond the soft palate into the throat, thus finding its way out by the mouth. We took a small drill and cut through from the palatine surface of the incisor into the pulp-chamber, and found the pulp dead and decomposed, cleansed out with carbolic acid, and subsequently filled.

GALVANIC ACTION WITHIN THE MOUTH—ITS RELATION TO DENTAL SURGERY.

BY GEO. WATT, M. D. D. D. S.

Coming from the medical into the dental profession, I fancied that dentists had paid less attention to chemistry than to other sciences collateral with Dental Surgery. This fancy had much to do in guiding my own thoughts and efforts in the endeavor to contribute my share toward the advancement of dental science. And whether or not this fancy were founded on fact, I certainly noticed less distinctness of thought, in reference to the chemistry of the mouth, than I found on other subjects. And this was especially true, in regard to the chemical results of galvanic action in the mouth. Hoping mainly to aid my immediate classmates in mastering this subject, I made it the theme of an inaugural thesis, when a student in the Ohio College of Dental Surgery. (See "Intrastomatic Galvanism," in Watt's Chemical Essays.)

Within the last few years, much thought has been bestowed on this subject, especially by two or three members of the profession. The industry manifested by the brethren referred to, is highly commendable, and is I hope, duly appreciated by us all. With reluctance, let me say, that a closer attention to elementary principles would have saved much labor, and would have guided to more correct conclusions. Finding still a great lack of clear thinking on gal-

Digitized by Google

vanic action within the mouth, without attempting to criticise any one, I will offer a few spontaneous thoughts, without reference to authorities and text books, and with but little effort toward systematic instruction, aiming to write just as I would talk to my most familiar personal friends; for what else am I now doing? And if the first person, singular number should appear too prominent, I hope you will regard egotism as not more assuming than we-gotism, and that you will remember, without frequent mention of the fact, that every statement herein, is simply "according to my humble opinion."

Then, for galvanic action within the mouth, and its relation to Dental surgery.

Galvanism is modified electricity. An apparatus for setting in motion, or developing this condition of the electric fluid, is called a galvanic battery. Batteries are of two kinds, essentially, and each kind is subject to various modifications. One is composed of two perfect conductors of galvanic electricity, and an imperfect one. This is the more common variety. The elements of the other kind are one perfect and two imperfect conductors. This is less common, and as it is, neither by intention or accident placed within the mouth, it may be dismissed from present consideration. Only the first variety is of practical moment to the dental surgeon, and bearing in mind its constituent elements, remember also that unless the imperfect conductor acts chemically on one of the perfect ones, galvanism is not manifested. If it acts on both, it must act unequally, or no current is established. For illustration of these principles, think of the most common batteries. Zinc and copper are called perfect conductors; while the acidulated water, or saline solution, is an imperfect one. Though the metals differ in conducting power, they are called perfect conductors, as they relate to galvanism. In the zinc and copper battery, just referred to, the liquid acts on both metals; but, as it acts with more energy on the zinc than on the copper, galvanic action is manifested, and the greater the difference in the action on the two plates, other things being equal, the greater is the galvanic manifestation. Hence, if the copper is replaced by a metal which totally resists the action of the fluid, there is a gain in the power of the battery. In Groves,' and some other batteries, platinum is used instead of copper.

If the two plates of a battery, say zinc and copper, are placed in the exciting fluid, they assume opposite electric states, when not in contact with each other, or when not united by a metallic conductor; but there is only static electricity. But when brought in contact, either directly or by an intervening metallic conductor, the elec-

Digitized by Google

tricity is set in motion, and what is known as a galvanic circle is established. Such an electric current is a potent agent in chemical decomposition, but it has its limits, to be hereafter noticed.

Decomposition, by a galvanic current, is called electrolysis. A substance which can be so decomposed, is called an electrolyte. A conductor conveying a galvanic current into an electrolyte, is called an electrode. In practical chemistry, the electrodes, usually wires, convey the galvanic current into the electrolyte, generally contained in a vessel or reservoir at a greater or less distance from the battery, The preparation of A. J. Watts' crystal gold, is a beautiful illustration of this. But nothing analogous to such electrolysis ever occurs within the mouth, and if some of my brethren had duly appreciated this, they would have been saved much labor, with less confusion in their teachings. While decomposition is taking place in the receptacle where the electrodes terminate, to exactly the same degree is the liquid in the battery decomposed, provided that the battery is perfect, for all parts of a galvanic circle equal each other in quantity and power. This electrolysis, or decomposition, and this only, is analogous to that which may and does occur in the mouth. Had this been always borne in mind, the time and trouble of many experiments, which throw no light on this subject, might have been avoided.

It has been intimated that electrolysis has its limits,—only liquids can be electrolyzed; but how often do we hear of tooth substance—or dentos, whatever that may be—being decomposed by electrical currents! Water is readily electrolyzed, but ice, never. And not all liquids are electrolytes. Some, as alcohol ,will not conduct galvanic currents at all, and, of course, cannot be decomposed by such currents. And, further, only binary compounds, that is, such compounds as contain but two elements are decomposed by galvanic currents. Let not this be misunderstood. A liquid may be able to conduct galvanic currents, while it holds in solution a number of binary compounds. The current will decompose these in the ratio of their chemical equivalents. For example, in the mouth is found water, chloride of sodium, chloride of potassium, and sometimes ammonia, sulphuretted hydrogen, etc., each containing but two elements, and each, therefore, subject to electrolytic decomposition.

Thus far reference is had to true electrolysis—true galvanic decomposition, but the chemical action of agents thus liberated must not be overlooked. And these secondary actions must not be confounded with electrolysis, as has been far too common, I fear, by very many of my professional brethren. Very much of the chemical re-

Digitized by Google

sults of galvanic action is due to the affinities of the elements thus set free, which being presented in their nascent state, have the increased energy incident to that condition. If a tooth is in any degree disintegrated or corroded, as a result of galvanic action, the phenomenon is due to this secondary action, and never directly to electrolysis.

I regard the subject as greatly simplified, when this is clearly understood. Confusion of thought has resulted from an unprofitable discussion of the direction of the galvanic current in the battery, and along the electrodes. By confining our thoughts to the battery alone we gain clearness of view. All galvanic action within the mouth is analogous to what occurs here. To aid the memory, let us examine the action within the ordinary battery. If a strip of pure zinc and another of copper are placed in a liquid composed of sulphuric acid and water, and these strips are allowed to touch each other, or are united by an intervening metallic conductor, something takes place. The oxygen of the water unites with and corrodes the zinc; but when water yields oxygen, a corresponding equivalent of hydrogen is liberated. The gas being but slightly, if at all, soluble in water and unable to unite with either of the metals, escapes in bubbles, but only at the surface of the copper, if the battery is perfect. In the entire list of elements, oxygen and hydrogen are at opposite extremes of the electric scale. Oxygen is always more highly electro-negative than any other element, while hydrogen is more electro-positive than any other. But, as we have seen, oxygen goes to the zinc in the battery, and this because the zinc is positive, or in an electric state opposite to that of the oxygen. And the hydrogen goes to the copper, because it is negative, a state opposite to that of the hydrogen. Hydrogen is probably a metal. Now remember that all the metals take the same direction, when separated from the corrosive elements by electrolysis; and the corrosive, such as chlorine, sulphur, fluorine, etc., follow the example of oxygen. This brief statement, retained in the memory, affords a key to almost any supposable case of electrolytic decomposition.

To remember the direction of the positive current in the galvanic circle, we need only recall the fact that the zinc or corroded metal is positive. The current passes from this through the liquid to the copper, or uncorroded metal, along this to the electrode or connecting metal, and back to the zinc. The negative current, equal in power and velocity, traverses, simultaneously, the opposite direction; and this is the reason that telegrams can be sent in opposite directions at the same time on a single wire.

A singular attempt has been made to apply a knowledge of the di-

Digitized by Google

rection of the positive current to practical use in filling teeth. I allude to the suggestion that different metals be so arranged, in the same cavity, that a positive electric current will pass from the tooth substance to the filling, as if it were the current striking the tooth that destroys it. An old hunter used to show me how smoothly polished he kept the front sight of his rifle by looking along it. The two propositions are equally sound. But after all, guiding the positive current from the tooth to the filling, is only guiding the equally powerful negative current from the filling to the tooth.

Circumstances being equal, the quantity of electricity set in motion by a galvanic battery is directly in proportion to the surface excited. A pure zinc plate four inches square will give off sixteen times the quantity afforded by a similar plate an inch square.

Another elementary fact, often ignored, is, that the decomposing powers of batteries, other things being equal, vary inversely as the square root of the distances between the plates. When the plates are one inch apart the decomposing power is twice as great as when they are four inches, and four times as great as when they are sixteen. And in like manner, when they are a fourth of an inch apart, the power is double that of one inch, and is increased four-fold when they are but a sixteenth of an inch. An imperceptible distance (apparent contact) is many times less than a sixteenth of an inch, yet the increase of power is governed by the same law. The practical electrician sees daily illustrations of this, on account of the impurities of the zinc of commerce. Small particles of iron are often diffused through the zinc, which, with the latter metal, form an infinitesimal series of minute batteries of wonderful decomposing power, as is manifested by the great abundance of bubbles caused by the escaping hydrogen. This is an illustration of true electrolysis, as good as any known to electro-chemical science. The ultimate elements are separated in accordance with their relative electric properties, each going to the metal whose electric state is the opposite of its own.

Now suppose we place a plate of impure, commercial zinc, in a liquid containing not only water, but chloride of sodium, sulphuretted hydrogen, and ammonia. Here are four binary compounds, liquid, capable of conducting galvanic currents, and acting on the particles of both the zinc and iron, but with the greater energy on the zinc. The water will be electrolyzed, and it is easy to remember that its oxygen goes to and corrodes the zinc, while its hydrogen goes to the iron, and escapes in gas bubbles, unless it there finds something with which to combine. But the salt is also electrolyzed, its chlorine being a corrodent, follows the oxygen, while the sodium

Digitized by Google

goes to the iron. Sulphur goes with the oxygen,—its hydrogen of course to the iron.

When we reflect that these corrosive elements are brought to the zinc, in obedience to electric attraction rather than to chemical affinity, we can readily see that their corrosive action need not be, and is not all spent in corroding the zinc. When liberated they are free to obey the laws of affinity. But it is well known that nascent chlorine takes hydrogen from almost any compound containing it. The disinfecting and bleaching properties of chlorine are mainly due to this fact. It will, therefore, take hydrogen from water, forming hydro-chloric acid, and this at the zinc. Ammonia composed of hydrogen and nitrogen, if present, is also electrolyzed; and hydrogen being always electro-positive, of course the nitrogen has to go to the zinc, and as it there, in its nascent state, finds oxygen also nascent, combination takes place, nitric oxyd being first formed, which in the presence of air and water, is rapidly changed to nitric acid. It is on this principle only that the white variety of dental caries is ever found as a result of galvanic action within the mouth.

It might prove unprofitable to notice all the modes of producing galvanic action within the mouth. If I can say enough to awaken an interest in the subject, and to develop clearness of thought in reference to it, among my fellow members, this to me, laborious effort, will reap its full reward.

I fear that a few of my brethren misapprehend sometimes, and suspect the presence of galvanic currents in the mouth when the conditions necessary to their production are not present. For example, some have inferred that gold and platinum, in contact in the mouth, will give such results; but how can this be unless the fluids of the mouth corrode at least one of the metals? which is not likely to take place, unless in highly abnormal conditions. Again, when a cavity is partly filled with tinfoil, and the plug is finished with gold, there is often pain and irritation, on change of temperature, within the mouth. This is usually spoken of as a result of galvanic action, which it can hardly be, unless the plug leaks. The pain is ordinarily due to what, in the text books, is called thermo-electricity. Also, when two metals are placed in the mouth, and one is corroded by the buccal fluid, if they are not in contact, and if there is no better conductor connecting them than the fluid itself, the metals assume opposite electric states, but no current is established and decomposition of the fluid does not take place. The condition is that of static electricity. But if the metals touch each other or both touch the mucous membrane of the mouth, a regular circle is developed and de-

Digitized by Google

composition occurs in proportion to the quantity of galvanism thus set in motion. A gold plug and any one of base metals may constitute such battery, and let us suppose these plugs are in adjacent teeth, and in contact with each other at a given point, or both in contact with the gum at the necks of the teeth, the binary compounds in the buccal fluid must be decomposed, but how? Water and soluble chlorides are present in all mouths. Then, of water, the oxygen, and of the salts, the chlorine, go to the base metal, and the hydrogen of the water, and the metals of the chlorides go to the gold. But we have already seen that nascent chlorine takes hydrogen from compounds containing it, hence, hydrochloric acid must be formed at the base metal. And this is why we so often see the most common variety of dental caries about the margins of the base metal plugs; this decay being always the result of the action of hydrochloric acid.

Rape is a crime unknown in chemistry, and there is no social restriction among the elements demanding that one sex shall do all the courting. Hence, when the hydrogen reaches the gold, it takes chlorine from compounds containing it, as promptly as itself is captured by the chlorine at the other side of the battery. But by this combination we have hydrochloric acid again, and this is why we so often find the same variety of decay around the gold filling. At the other side much of the force of the chlorine, as well as of the acid, is spent in corroding the base metals, while neither the hydrogen nor the acid can attack the gold; but all the force of the acid is spent on the tooth; and thus the tooth with the gold plug is, in such cases, more corroded than that with the base metal, which leads some to the conclusion that the base metal is the better filling. A similar arrangement, with the same results, may be made by a gold plate and a base metal plug, as well as by other means which may be omitted from the present discussion.

When a gold plug leaks, there is apt to be galvanic action. The organic matter of dentine is a conductor, and in this case, represents the corroded or zinc side of the battery. Hydrochloric acid decay occurs in such cases, when the buccal fluids are normal, but when ammonia is present, we may have white decay co-operative with it, owing to the formation of nitric acid by electrolysis of the ammonia.

The "amalgam question" would be entirely omitted here, if faithfulness to science would permit. Its general bearings, of course, lie beyond the range of this paper. Only as amalgams are factors in galvanic action within the mouth, will they be noticed, and even in this aspect but briefly.

Digitized by Google

The word "amalgam" always implies that mercury is one of its constituents. Probably the first one used in filling teeth was composed of silver and mercury. That most extensively used for many years, contained tin, in addition. This may be taken as a type of the race, without stopping to discuss special formulas. Satan is the devil still, even if clothed in the garb of an angel of light; and the ass brayed when he tried to roar, although covered with the skin of a lion.

Very few will claim, I think, that amalgam plugs are pure alloys, in the same sense that brass is an alloy of zinc and copper. The alloy prepared ready for the mercury is made by commingling or fusing together, metals without any reference to their chemical equivalents, and in some cases by using metals which will not combine to form a true alloy. Then the mercury is added by guess work, and its excess is squeezed out till the operator thinks he has squeezed it sufficiently tight, and guesses about enough free mercury has escaped; and, although in amalgamating there is much more oxidation in some cases than in others, he guesses that will make no difference, even if it should change the proportions of his metals, which he guessed were about right at the start; and he guesses he can fill with amalgam, even if he cannot with gold.

The scientific metallurgist will tell you, that while there is something of the alloy in your amalgam, there is, at the same time, much of the mechanical mixture. At best it is analogous to commercial zinc, as an exciter of galvanic action in a corrosive fluid. Tin has less affinity for oxygen than either silver or mercury. The infinitesimal particles of tin become negative, while the corresponding particles of the other metals are rendered positive. As the distances are imperceptible, the decomposing power is very great in proportion to the surface excited. Thus an amalgam filling has, within itself, all that is necessary to electrolyze the binary compounds of the buccal fluids. It may also act as the positive or corroded side of a battery, when in the proper relation with a gold plug or plate; but its principal galvanic power is as already described.

But this paper, much too long, must be brought to a close. I hope the hints herein set forth will aid my fellow members to clearness of thought in reference to this important subject. Allow me to say that I have not used, in this paper, the latest chemical nomenclature. I am more familiar with the old. Probably a majority of my fellow members are too. It will thus better accord with my previously written essays, should it be published with the proceedings of this meeting. And as technical terms are avoided as far as practicable, I hope

Digitized by Google

my younger brethren, who are more familiar with the new nomenclature, will have but little difficulty in following the thoughts set forth. Allow me also to say that this paper is written for this society at the request of some of its most active and experienced members..

CEMENT, IN CONNECTION WITH GOLD FOR FILLING TEETH.

BY J. H. SIDDALL.

"To what extent are we justified in using the cements or artificial bone in filling teeth, if covered with gold?"

This is the literal and orginal subject, out of which grew the one before us, it having been proposed by myself, and upon condition that I would write an essay upon it, Drs. Rehwinkle and Butler accepted it! But in reshaping it, it was misshaped to such an extent, that if I were inclined to claim a forfeiture of the contract, I am sure I would be sustained upon a comparison of the two subjects! This one, however, having claimed my attention very considerably for the past few years, and it not having been vindicated very extensively, I bring it to your notice, hoping and believing that as any other agent or proposition, it will have its assailants, and however radical or conservative they may be, I shall commit it to them, to deal with as seemeth them good, that the merits of German cement as a base for gold fillings may be fully developed!

Not unlike the degenerate amalgam—a sporadic and infrequent product of American dentistry (?) existing only as a monument to some empiric, who has long since been consigned to oblivion—typically and ironically speaking. I cannot refrain from alluding to a case that came within my observation in the past year. I found that in the posterior approximal and buccal surface of a lower dens sapientie an abortive attempt had been made to make a large filling with gold, and in a similar one on the opposite side I found a very good and well made filling of amalgam. And when I learned it was made by a member whose name is engraven upon the Presidential mallet of the State Society, I bethought me of the great ex-Reformer of the Cross Roads, and like him, when overcome with political emotion, "lay down and wept."

Claiming your pardon for the desultory manner with which I have thus far treated the subject of our title, I will draw from my cabinet

Digitized by Google

a package of German Cement, and before I apply it will leap the track again. First, we will fill a very large cavity upon the approximal surface of a central incisor. We excavate, and find the dentine highly sensitive, and the nerve well nigh exposed; every breath of air, or a drop of cold liquid, will add untold torture to that living, pulsating structure that now appeals to you in the modern name of Dental Science for relief. Gold, the great panacea, won't do here. The opulent patient proffers a handsome reward for a successful operation. Who will take the contract? Castles once built on theories half-tested, have tumbled and fallen as time has proven their fallacy. Thus stranded upon the shores of cimmerian darkness, and, like Hafed, bewailing the world of chance in which I was cast, a ray of light chanced to cross my mind. This light was not from the great depurator, blue glass, else it would certainly have been utilized sooner than it was, and by its magic power over exposed and diseased nerves, long ere this have converted every erratic knight of the forceps into a National Bank! but it was light gained from an experimental knowledge of collodion as a therapeutic and protective agent. Guided, therefore, by experience as well as reason, I began a series of experiments, the results of which were so favorable that I will give what, in the hypothetical case I have drawn, has proven in my hands a valuable protection to exposed nerves and sensitive dentine. Of course this does not apply where there is an impaired functional, or abnormal diathesis of the dental pulp. The application, then, of warm collodion, made of equal parts of sulphuric ether and alcohol, to which add six grains of gun cotton to the ounce—warmed by submerging the bottle that contains it in warm water—will cause no pain. Upon this, if two or three coatings of collodion have been made, may be placed. As artificial or German Cement, which, if mixed tolerably stiff, will produce not the slightest sensation, or ill-effect. A good foundation having now been made, subsequently, say on the following day, finish the preparation for filling by excavating and drilling retaining pits in the cement, removing only enough to allow a sufficient covering of gold to be self-supporting, and we have gained by *prophylactic treatment*, First, a nerve *not* capped, consequently a dentist not fooled. Second, a tooth that is not affected by mastication or thermal changes. Third, a better color, by reason of the gold not showing through the enamel. And last, but not less important, a saving of time and money to the patient.

Next we have a large cavity in the grinding surface of a molar. After removing the superficial decay and trimming the weak edges—little matter what shape it assumes, so it will hold the cement—we fill it

Digitized by Google

say three-fourths full. Afterwards excavate in the cement a wholesome shaped cavity, being careful to now and then anchor well under the edge of the enamel, and a well-made covering of gold will furnish a structure that six years' experience has taught me is superior to and much more easily made than one all done with gold. The cement, being more likened unto the bony structure of the tooth, readily yielding and clinging to any shaped cavity, and being a non-conductor and indestructible, when not exposed to the acids of the mouth, fills a wonderful void in operative dentistry. As for the collodion, like the jumping tooth ache, it needs only to be tried to be appreciated.

Should these few thoughts, snatched from an occasional respite of a year fraught with labor and great disaster, prove of service to any member of my beloved profession, then my object will have been accomplished.

LIBRARY
COLLEGE OF DENTISTRY
UNIVERSITY OF CALIFORNIA
SAN FRANCISCO

CONSERVATION OF VITAL FORCE.

BY DR. I. WILLIAMS, D. D. S.

Upon retiring from the Presidency of the Ohio State Dental Society, December 7th, 1877.

Gentlemen of the Ohio Dental Association :

The fields of thought most appropriate to an occasion like the present, have been fully explored by my predecessors.

Dental education, literature, societies, jurisprudence, ethics, etc., have been duly considered, in these annual addresses. I ask your pardon, therefore, for the presentation of some thoughts that may seem somewhat foreign to the peculiar class of subjects and questions that call us together in these annual convocations. Trusting, however, that you will consider the subject that I shall present, not wholly inappropriate.

How our lives may be prolonged, in good working order, to the greatest possible extent, and how the highest degree of physical strength and mental vigor may be attained and conserved, are, it has seemed to me, questions worthy of our most careful consideration.

There are times when we feel abounding life and energy, every nerve readily conveying the vital fluid to the muscles called into ac-

Digitized by Google

tion by the will. At such times we feel master of the situation, whatever it may be; to work or think is a pleasure, a positive luxury. To arrive at a knowledge of the laws on which such conditions depend, and how such physico-mental states may be made more generally to obtain, may well engage the attention of thinking and working men in any profession or vocation in life. All may not acquire perfect physical organizations; all have not been endowed with a possibility so desirable; but all can economize the protoplasm of life and develop the greatest possible amount of *vital force* in the organizations that have been transmitted to them. Often have persons, possessing very feeble constitutions, by a careful husbanding of all their forces, accomplished more, suffered as little, and lived longer, than others who have been splendidly endowed. The robust are often prodigal of their abundance and speedily become bankrupt.

The intellectual faculties may have acquired the broadest and deepest culture, such culture as may be obtained by a thorough mastery of the branches usually embraced in the best college curriculum, supplemented by a thorough course of training under private preceptors, and in the medical and dental schools. There may exist the finest moral and social qualities; the hand and fingers may have acquired a marvelous amount of skill and cunning; all this culture, let us hope, the COMING dentist will have; but what would all these splendid acquirements of "head, heart and hand," be without an adequate amount of vital force? Like the grand and beautiful locomotive with the steam left out, like a ship without a sail.

Where is the compensation for the time, money and energy expended in the acquisition of all this literary and professional culture and training, if *superannuated*, or *deceased* is to be written over it all, before life's sun has reached the meridian. Too many splendid wrecks mark the pathway of professional life. It is as much the duty of professional men to point out the causes that inevitably lead to physical and mental enervation, as to impart a knowledge of the principles on which the successful practice of any of the learned professions is based. The long continued hard work of life can only be accomplished well by those having full vital force and an iron will. Resistance can only be overcome by an equal amount of force.

The highest, most perfect and spontaneous action of the mental faculties, as memory, judgment, original suggestion, etc., depends on a full supply of life force. The physician or dentist, weary and exhausted with over work, must necessarily fail in diagnosis, and the application of proper remedial agents. The mind of the surgeon perceives conditions and relations, and decides upon a course proper

Digitized by Google

to be pursued; and the bodily organs execute the plans and purposes of the judgment. The execution will be perfect or defective according to the bodily condition. Why does the hand of one individual, in the performance of a delicate operation, tremble like the aspen leaf, while every nerve and muscle of another, not superior to the first in culture and skill, is firm and steady, perfectly executing the purposes of the judgment and will? The first approached his work destitute of that full supply of force which only can give firmness and precision. The second was thoroughly equipped with strength and self-control. Vital force thoroughly under control of the judgment and will, gives confidence, to both patient and operator; while a manifest want of it, *discourages* the operator and *disgusts* the patient. How often has the weak, timid patient been stimulated and encouraged by the cool, deliberate, kind dentist or surgeon.

The most elaborate research has been made by scientific men to discover the primal origin and inception of life, and its resultant, vital force. Whether life has its origin in a spiritual entity in conjunction with organization, or whether it results from organization alone, are questions on which scientific men are divided; and which they are not likely soon to settle. What phenomena may attend the existence of spirit disconnected with, and independent of organization, is beyond the province of science to determine. This much science has demonstrated: life has a physical basis; and without materiality, there is no manifestation of life or vital force. When the living human organism receives within itself food of a proper character, it is subjected to numerous changes and modifications; and there is evolved a something that we call vital force or energy; certain phenomena that are called mental, and others that are called physical. Whether these phenomena exist *solely* on account of a certain molecular arrangement of the particles of matter, derived from the food, which have become part of the living organism, we certainly are not able to determine. One thing only we do know: without the food, none of these phenomena could have any existence, discernable by any of our senses.

It is a fact then, verified constantly, that food is an essential factor in the production of vital phenomena. To say that it is the *one efficient factor*, would be to assume more than can be demonstrated or verified by any known method of induction or experiment. It is enough for our present purpose to know that it is an essential factor; and that the kind of food has something to do in the degree of force evolved. These are knowable things, and of much practical importance.

Digitized by Google

Material substances cannot be indiscriminately appropriated by the assimulative functions. So far as I am able to ascertain, it is not in the power of the animal organism to appropriate and convert *mineral compounds* into *living tissue.* The order of nature is, that plants in their growth, appropriate the mineral compounds, and so change them that these same elements may be appropriated by the living animal organism, and become part of it. And again, after having been elevated from the vegetable to the animal plain, these same elements may become food for other animal organizations, be readily appropriated; and in their metamorphosis produce the constant phenomena of *force.*

It seems to me most natural to infer, and it accords with facts well established, that after vegetable protoplasm has been elevated by the inferior animals to that plane, it is then, as it exists in the healthy inferior animal, best suited to become food, in a large degree, of human beings, and its conversion into our own tissue is effected with less loss of force than most other kinds of food. True, those of the vegetarian persuasion claim exactly the opposite; but their theory seems lacking in matter of fact demonstration. Those animals that live on the flesh of other animals, are, as a rule, distinguished for their strength, activity and sagacity. "The lion is the king of beasts." Certainly it cannot be shown that physical and mental force finds its highest and most perfect exemplification in those men who have entirely discarded animal food as an article of diet. We believe that the best authorities in the world are agreed upon this; that good, fresh beef, mutton, wild game, fowls and fish, contain the greatest amount of nutriment, in the most convenient form. I speak of the diet of healthy persons only. The diet of diseased persons must be considered from a pathological standpoint.

Prof. Agassiz says: "The fish enters largely into the requisition of the human system. It is a kind of food which refreshes the system, especially after intellectual fatigue. There is no other article of food that supplies the waste of the head so thoroughly as fish diet; and the evidence of it is in the fact that all the inhabitants of the sea shores, the world over, are the brighter population of the country. Fish contains phosphorus to a large extent; a chemical element which the brain requires for growth and health. We would not say that an exclusive use of fish would make a blockhead a wise man, but that the brain should not be wanting in one of its essential elements."

Ex-Governor Seymour says, "That there is more nutritious food in an acre of water, well stocked with fish, than in the best wheat growing farm in New York." Let each one test this matter for himself, and he will know of the doctrine whether it be true or false.

Digitized by Google

The superiority of the well-to-do farmer over the poorly fed and poorly clad common laborer, is very largely owing to the fact that the former eats more and better food than the latter. The superiority of the officer over the common soldier has a similar explanation.

There can be no thought, no volition, no action, without food; and by *increasing* the quantity and *improving* the quality, our ability to work either mentally or physically will be increased. The law manifests itself in this, that when action is increased the demand for food is increased.

The influence of sun-light on animal and vegetable life has been observed by all, and yet thousands, who might otherwise be strong and healthful, are weak and feeble, because they are deprived to a great extent of its health-giving influence. All must admit, whether able to understand the chemical effects of sun-light or not, that without it all vegetable and animal life would soon become extinct. There is not a flower, plant or tree, that can perfect itself if grown in the shade; and there is no animal life developed into healthful activity and energy, when deprived habitually of sun-light. Unfortunately, the rays of the sun produce a shade of color not generally admired; but better the sun-browned cheek than the pale delicacy of weakness. Sun-light is Nature's great energizing element; and those who enjoy most of it, other things being equal, are the most energetic, the most healthful. It may be questioned whether those rooms into which the sun's rays never enter are fit to work in, to sleep in, or even to be sick in. Every bone, muscle and nerve, every vital organ, every tissue, is influenced for healthy growth and activity by a plentiful supply of the pure light of day.

Dr. Franklin's great discovery that sun-light is cheaper than candle-light, is full of blessing to those who are wise enough to take the hint. Many noble men in our profession are weak, and die prematurely, because they do not use, as they should, this great panacea of nature.

Pure air, in its effects upon the system, is closely allied to sun-light. It seems to me, that no intelligent man, in his sober senses, could allow himself to be packed in a crowded audience, for an hour or more, in a badly ventilated room. If it were possible to *see* the impurity floating in the air of crowded audiences, with but little provision for admitting pure air, and no provision for the escape of the impure, every man, woman and child would escape as precipitately as if the building were on fire.

To say nothing of the many cases of speedy death from breathing badly vitiated air, it is a well ascertained fact that to breathe only moderately impure air, day after day, for a considerable period of

Digitized by Google

time, is productive of very serious consequences. The teachers in our public schools are usually sufferers from this cause; as their pallid faces, partial loss of appetite, decline in vivacity and decrease of muscular strength well attest. Bronchitis and phthisis pulmonalis, frequently result from the same cause.

Not only should the laws by which force is generated be well understood, but the means by which it may be conserved, that it may be applied "where it will do the most good," should receive attention likewise.

Some men earn an abundance of money, but never have any when they need it, because they spend it without thought or consideration. Some men spend their vital force in the same manner. No man can have a good supply of energy on hand, who is constantly making drafts upon it, without allowing time for sufficient rest and recreation to intervene. Some men seem to intertain the idea that spending a week or two, once a year, at some fashionable watering place, where all the laws of health are usually violated, is about all that is needed in the way of rest, diversion and exercise. This will not meet the demands of the tired mental and physical organs. If there be daily *wear*, there must be daily *recuperation.*

Horseback riding furnishes by far the greatest amount of invigoration, in the shortest period of time. We have by this means the exercise and increased circulation, with but little loss of force, because very little voluntary effort is required.

Action either of the mind or body necessarily uses up force; and the more complexity, difficulty, uncertainty, risk or responsibility of the work to be done, the greater will be the loss of force. Those occupations that make large drafts on the physico-mental faculties are the most exhausting; and, except in the most powerful constitutions, such occupations can only be pursued through a long life time by wisely and judiciously allowing periods of rest and diversion to follow work.

The premature death of that most eminent Surgeon, Dr. Metz, of Massillon, O., is a sad example of over-work in professional life.

Nothing so effectually prevents an excessive loss of vital force in the performance of delicate operations, as conscious ability to accomplish the work in a thorough and skillful manner. Where doubts and uncertainty exist, there will be worry; and worry is always more exhausting than work. Hence the importance of young men, designing to enter the dental profession, or any other profession, laying the foundation broad and deep in thorough general and special culture, before assuming the responsibilities of professional life.

In conclusion, gentlemen of the Ohio Dental Association, allow me to thank you, *most sincerely*, for the honor you have conferred in calling me to preside over your deliberations.

Digitized by Google

LIST OF ACTIVE MEMBERS

OF THE

OHIO STATE DENTAL SOCIETY.

AMBLER, H. L., Cleveland.
ACHESON, N. B., Youngstown.
ARRISON, E. O., Pataskala.
BUTLER, C. R., Cleveland
BUFFETT, L., Cleveland.
BEAUMAN, J. B., Columbus.
BERRY, A., Cincinnati.
BILLINGS, G. D., Medina.
BROWN, IRA, Cleveland,
BROWN, A. L., Chillicothe.
BOAL, R. H., Urbana.
BRADLEY, C., Dayton.
CARIS, W. G., Kent.
CORSON, RICHARD, Middletown.
CLANCEY, D. W., Cincinnati.
CHIDESTER, E., Massillon.
CLARK, H. R., Circleville.
CARTER, W. H., London.
DOUDS, A. J., Canton.
DUNN, J. A., Columbus.
DENNIS, J. F., Washington C. H.
EMMINGER, A. F., Columbus.
GALBREATH, W. F., Greenfield.
HORTON, W. P., Cleveland.
HARROUN, C. H., Toledo.
HORTON, ROLLIN, Cleveland.
HOLBROOK, L. P., Shelby.
HUNTER, F. F., Cambridge.
HAUGHTON, F. H., Columbus.
PORTER, J. M., Toledo.
PRICE, A. F., Fremont.
PEEBLES, R. R., Cleveland.
REHWINKEL, F. H., Chillicothe.
REID, H. M., Cincinnati.
ROGERS, E. E., Hudson.
RUHL, C. E., Findlay.
RICE, W. P., Mt. Union.
SMITH, H. A., Cincinnati.
SCOTT, J. L., Defiance.
STEWART, F. B., Columbus
STEWART, W. C., Elyria.
STEDMAN, J. J., Wellington.
SAGE, F. W., Cincinnati.
SIDDALL, J. F., Oberlin.
SIM, M. C., Delaware.
SLOAN, E. C., Ironton.
SEDGWICK, W. H., Granville.
SPENCER, ALLEN, Columbus.
SABIN, C. R., Troy.
SAFFORD, J. R., Gallipolis.
SAPP, J. B., Cleveland.
SIDDALL, J. H., Canton,
SILLITO, W. H., Xenia.
STEPHAN, J., Cleveland.
TAFT, J. Cincinnati.
TAFT, C. R., Cincinnati,
TAYLOR, J. I., Cincinnati.
VON BONHURST, C. G., Lancaster.

Digitized by Google

HUNTER, FRANK A., Cincinnati.
JENNINGS, D. R., Cleveland.
JACOBS, F. O., Newark.
KEELY, GEO. W., Oxford.
LILLY, W. R., Circleville.
LYDER, J. W. Alliance.
MOREY, C. W., Marysville.
MCKINLEY, W. J., Uricksville.
OLDHAM, J. C., Springfield.
PALMER, P. A., Marietta.
WATT, GEO., Xenia.
WELSH, L. B., Wilmington.
WILLIAMS, I., New Philadelphia.
WHINNERY, J. C., Salem.
WAGNER, SAMUEL, Gallion.
WELCH, CHARLES, Wilmington.
WARNER, R. G., Columbus.
WARNER, J. H., Columbus.
WAIT, R. D., Coshocton.
YAGER, E. B., Orrville.

Honorary Members.

CLAYTON, J. R., Shelbyville, Ind.
JAMES, C. H., Cincinnati.
HUNT, P. G. C., Indianapolis, Ind.
TEMPLETON, J. G., Pittsburg, Pa.
WELLS, M., Indianapolis, Ind.
VAN ANTWERP, WM., Mt. Sterling, Ky.
HERRIOTT, W. M., Indianapolis, Ind.
FRENCH, D. G., Pittsburg, Pa.
WILLIAMS, N. W., Geneva, Switzerland.
VAN MARTER, J. G., Basle.
WRIGHT, C. M., Basle.
FIELDS, G. W., London, England.
DENNIS, S. W., San Francisco, Cal.
WARNER, ALEX., San Francisco, Cal.
ATKINSON, WM. H., New York City.
GARNER, DR., Muncie, Ind.
WHITNEY, J. M., Sandwich Islands.
JAMESON, J. K., Connersville, Ind.
WHINNERY, J. CARROLL, San Francisco, Cal.

Digitized by Google

CORRECTIONS AND ADDITIONS

To the List of Dentists of Ohio, as Given in the Transactions of 1876.

NAME.	TOWN.	COUNTY.	Professional Standing.
S. D. Stewart,	Akron	Summit	L.
J. M. Segur,	"	"	L.
H. J. Cressinger,	Ashland	Ashland	L.
J. H. Siddall,	Canton	Stark	L.
E. Tibbetts	Cincinnati	Hamilton	L.
P. H. Brown,	Congress	Wayne	L.
A. Cooper,	Cambridge	Guernsey	L.
L. S. Jameson,	Camden		
F. R. Morehead,	Chandlersville	Muskingum	L.
F. G. Dawson,	Columbus	Franklin	L.
Jas. Huston,	Dunkirk	Hardin	L.
J. W. Wortman	Dresden	Muskingum	G.
W. H. Miller,	Elyria		G.
A. B. Anshultz,	Goshen	Clermont	L.
J. R. Safford,	Gallipolis	Galia	L.
G. W. Ellis,	Hillsboro	Highland	L.
B. R. Shepp,	"	"	L.
S. L. Rogers,	Jackson	Jackson	L.
J. H. Wood,	Lebanon	Warren	L.
D. Finney,	Logan	Hocking	
J. L. Mitchell	London	Madison	L.
G. A. Dille,	Lima	Allen	L.
W. H. Carter,	London	Madison	L.
E. L. Perry	Milan	Erie	L.
F. F. Wilson,	Macomb		
T. G. Bristor,	Mansfield	Richland	L.
J. Custard,	New Lisbon	Columbiana	L.
L. B. Swingle,	New Lexington	Perry	L.
A. L. Condit,	Perrysburg	Wood	L.
Thos. S. Seely,	Plymouth	Richland	L.
C. C. Beilharze,	Tiffin	Seneca	L.
S. J. Way,	Waynesville,	Warren	G.
B. F. Bowman,	Winchester,	Preble	G.
W. G. Donnard,	Wapakoneta	Auglaize	L.
Wm. C. Kavanaugh,	W. Liberty,	Logan	L.
D. W. Gill,	"	"	G.
W. H. Sillito,	Xenia	Green	L.

Digitized by Google

CONTENTS.

	PAGE.
PREFACE,	3
OFFICERS AND COMMITTEES,	4
MINUTES,	5
DISCUSSIONS—	
Influence of Diseased Teeth,	16
Sanitary Treatment of Teeth,	35
Mechanical Dentistry,	63
Galvanic Action within the Mouth—Its Relation to Dental Surgery,	77
Cement, in Connection with Gold for Filling Teeth,	85
Conservation of the Vital Force,	87
LIST OF ACTIVE MEMBERS,	93
HONORARY MEMBERS,	94
CORRECTIONS AND ADDITIONS TO LIST OF DENTISTS,	95

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Date Due

Digitized by Google

LIBRARY RULES

HOURS 11-12 A.M.

1. One book only will be issued on presentation of borrower's card.

2. Books may be retained for a period of four days. Renewal for four days more will be made upon request.

3. A fine of 5 cents per day will be charged on books not returned when due.

4. Borrowers will be charged for all injury to books.

LIBRARIAN'S HOURS

MONDAY AND FRIDAY, 9-12 A.M.
WEDNESDAY, 1-4 P.M.

Digitized by Google

Digitized by Google